FMFM 6-21

Tactical Fundamentals of Helicopterborne Operations

U.S. Marine Corps

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FOREWORD

1. PURPOSE

Fleet Marine Force Manual (FMFM) 6-21, *Tactical Fundamentals of Helicopterborne Operations*, provides the doctrinal foundation for helicopterborne operations in subsequent operations ashore.

2. SCOPE

This manual describes how infantry and aviation units plan and conduct helicopterborne operations during subsequent operations ashore. It emphasizes the coordination necessary between ground, air, combat support, and combat service support organizations concerning the planning sequence and tactical employment of ground and aviation elements. This manual does not contain information relative to amphibious operations. Helicopterborne operations in amphibious operations are discussed in NWP 22-3, NWP 55-9-ASH, and Joint Pub 3-02.1.

3. SUPERSESSION

None.

4. CHANGES

Recommendations for improvements to this manual are encouraged from commands as well as from individuals. Forward suggestions using the User Suggestion Form format to—

Commanding General
Doctrine Division (C 42)
Marine Corps Combat Development Command
2042 Broadway Street Suite 210
Quantico, VA 22134-5021

5. CERTIFICATION

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS

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User Suggestion Form

From:

To: Commanding General, Doctrine Division (C 42), Marine Corps Combat Development Command, 2042 Broadway Street Suite 210, Quantico, Virginia 22134-5021

Subj: RECOMMENDATIONS CONCERNING FMFM 6-21, *TACTICAL FUNDAMENTALS OF HELICOPTERBORNE OPERATIONS*

1. In accordance with the foreword to FMFM 6-21, which invites individuals to submit suggestions concerning this FMFM directly to the above addressee, the following unclassified recommendation is forwarded:

Page	Article/Paragraph No.	Line No.	Figure/Table No.

Nature of Change:

- ☐ Add
- ☐ Delete
- ☐ Change
- ☐ Correct

2. Proposed new verbatim text: (Verbatim, double-spaced; continue on additional pages as necessary.)

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Chapter 1

Introduction to Helicopterborne Operations

1001. Doctrinal Foundation

a. Helicopterborne operations are those operations in which assault forces (combat, combat support [CS], and combat service support [CSS]), using the firepower, mobility, and total integration of helicopter assets, maneuver on the battlefield under the direction of the assigned commander to engage and destroy enemy forces or to seize key terrain. The most common helicopterborne operation is a helicopterborne assault. A helicopterborne assault is a landing of helicopterborne forces within or adjacent to an objective area for the purpose of occupying and controlling the helicopterborne objective area and positioning units for action against hostile forces.

b. Helicopterborne operations are tactical movements by helicopter to support the ground tactical plan. They should not be considered merely movements of Marines, weapons, and materiel by helicopter units. Helicopterborne operations are deliberate, precisely planned and vigorously executed combat operations designed to allow friendly forces to strike over extended distances and terrain barriers to attack the enemy when and where he is most vulnerable. In essence, helicopterborne operations promote versatility of infantry forces in multiple operations.

c. Helicopterborne operations promote the combined arms concept through coordination and planning between the air and ground commanders. (See par. 1006b.) This manual describes how infantry and aviation units plan and conduct helicopterborne operations according to the ground tactical plan for subsequent operations ashore. It emphasizes the coordination necessary between ground combat, CS, and air organizations concerning the planning sequence and tactical employment of ground and aviation elements. This manual is written primarily for infantry and aviation units and is applicable to combat, CS, and CSS units with a need to plan for and use helicopter support.

NOTE: Air movement operations are those operations involving the use of Marine or Air Force airlift assets for other than helicopterborne operations. These operations are used to move troops and equipment, to emplace artillery and other CS assets, and to transport ammunition, fuel, and supplies. The same general plans used for helicopterborne operations may need to be prepared for large scale air movement operations. In these operations, aviation is not task organized with other members of the combined arms team to engage enemy forces. When an airlift is completed, the air movement operation is terminated, and, unless otherwise specified in the order, aviation units are released to return to their parent units. To take advantage of the opportunities offered by a helicopterborne task force, commanders and leaders must develop an insight into the principles governing their development (organization) and employment.

d. This manual supersedes FMFM 3-3 which addressed ship-to-shore operations. Helicopterborne operations in amphibious operations are sufficiently discussed in NWP 22-3, NWP 55-9-ASH, and Joint Pub 3-02.1. FMFM 6-21, *Tactical Fundamentals of Helicopterborne Operations*, is written to show the versatility of helicopterborne operations and explains the tactical fundamentals of helicopterborne operations for ground-based operations once ashore.

FMFM 6-21 is compatible with U.S. Army and NATO doctrine as expressed in FM 90-4, *Air Assault Operations*.

The significant difference from previous publications are in the following areas:

(1) The manual explains and emphasizes the need for ground and air units to plan, coordinate, and execute tactically from the supported unit's assembly area through the final objective. (See chapter 7.)

(2) The manual distinguishes between a pickup zone (PZ) and a landing zone (LZ). Previous publications only discussed the LZ. This FMFM defines the PZ, explains the considerations involved in selecting and establishing the PZ, discusses ground and helicopter movement from the assembly areas to PZs, and explains how to use and operate a PZ. Moving from an assembly area to a PZ on land is vastly different than moving from troop spaces to a flight deck aboard ship. This manual lays out tactical considerations for both ground and air elements in moving to, securing, and operating a PZ.

1002. Helicopterborne Operations

a. A helicopterborne operation is a tactical operation normally in support of the ground tactical plan wherein the movement of troops, supplies, and/or equipment is accomplished by helicopters. Helicopterborne operations allow the commander to maneuver rapidly to achieve tactical surprise and mass his forces, regardless of terrain obstacles and without dependence on ground lines of communication.

b. The fundamental characteristic of helicopterborne operations is the use of helicopters to improve the tactical mobility of a ground force. The speed and mobility of helicopters can provide freedom of rapid maneuver. Freedom of rapid maneuver can then fix the enemy and mass sufficient combat power to destroy him over distances which would otherwise be impossible to traverse so quickly. The flexibility and versatility of the helicopter may permit the ground commander to reduce time and distance limitations normally encountered in the movement of troops.

c. A helicopterborne operation generally takes place in the following sequence of phases—

- Planning.
- Loading.
- Air movement.
- Landing.
- Tactical ground operation.

1003. Tactical Considerations for Helicopterborne Operations

Generally, the fundamentals of ground combat apply to helicopterborne operations. However, there are considerations that only apply to helicopterborne operations. These considerations are as follows:

a. Because helicopterborne forces, once they have landed, lack tactical mobility and heavy weapons, it is important that the forces be landed on or near the objective. Successful accomplishment of the mission can be threatened if a force is landed a short distance further from the objective than planned, particularly if the enemy has superior ground mobility. Consequently, the landing of a helicopterborne force in any location other than the designated LZ is justified only when landing in the designated zone poses a threat to the survival of the force.

b. Helicopterborne forces may operate in conjunction with other ground forces or independently. Helicopterborne forces enable the commander to react quickly over the entire depth and width of his area of responsibility. If used

properly, helicopterborne operations become an integral part of the ground battle.

c. As with an amphibious assault, a prime concern for the commander is the rapid build-up of combat power on the ground. Fully one-third of the assault elements of a helicopterborne force should be landed in the initial wave; for a battalion landing, a minimum of one company should be landed in the first wave, and for a company landing, a minimum of one platoon.

d. If the enemy situation prevents the use of helicopters to land assault troops, helicopters may be employed to displace the reserve and supporting weapons forward to the objective once it has been secured by ground attack. Helicopters may also be used to reposition forces laterally on the battlefield, out of the range of most enemy air defense weapons.

e. In most conflicts, the loss of helicopters during helicopterborne operations will be due to enemy action. The acceptable level of aircraft losses depends on the situation and the nature of the conflict.

f. Helicopters are an excellent means of tactical deception. When possible, helicopters may be used to make demonstration landings in several different zones during one flight to deceive the enemy as to the true objective of an operation.

g. When possible, helicopterborne attacks are launched against undefended or lightly defended objectives. When attacking a well defended objective, care must be taken to select nearby LZs in which the force can be landed safely, to provide sufficient fire support, and to adequately suppress enemy air defenses.

h. Helicopterborne forces are vulnerable to attack helicopters, fixed-wing aircraft, and surface-to-air missiles. To counter this vulnerability, friendly attack helicopters escort the helicopterborne forces during air movement, and indirect fires are used to suppress or neutralize enemy air defenses. At the time of landing, helicopterborne forces are especially vulnerable and may be disorganized for a short time. Air defense weapons are employed to counter this vulnerability in the PZs as well as in the LZs.

i. Ideally, helicopterborne forces should be employed to allow an early linkup with vehicular ground mobility and sustainability. Once there, it is advisable to use the helicopterborne force as the stationary force during the linkup because of their lack of mobility when on the ground. See chapter 4, paragraph 4306 for linkup operations.

j. The increased mobility of a helicopterborne force allows the commander to extend his area of influence. However, there is increased risk when employing helicopterborne forces against deep objectives. Risks which should be considered include—

- Greater exposure to enemy ground fire and enemy aircraft.
- Possible loss of surprise.
- Possible involvement with enemy reserves.
- Increased vulnerability to enemy counterattack pending linkup with ground forces.

The prerequisites for success in deep helicopterborne operations are the capability to move securely to the objective area, to operate without ground lines of communications, to provide CS and CSS, and to withdraw the force if or when required.

k. Due to the lack of vehicles and other support during the initial stages of the operation, Marines will be required to carry all the necessary supplies and equipment. Commanders must ensure that Marines are burdened with only those items that are **absolutely essential** to the accomplishment of the mission. As they depart the LZ, Marines carry only the gear necessary for them to perform their

mission. The commander ensures that other supplies and equipment are delivered at the earliest opportunity. For more on the individual load, see FMFM 6-1, *The Marine Division*, chapter 13, paragraph 13103.

l. Because of the need for coordination between the ground and helicopter units, rehearsals are an important part of a helicopterborne operation. At a minimum, actions in the PZs and LZs should be rehearsed.

1004. Air-Ground Team

Infantry and air units can be fully integrated with other members of the combined arms team to form powerful and flexible helicopterborne task forces (HTFs). These forces can project combat power throughout the entire depth, width, and breadth of the modern battlefield with little regard for terrain barriers. The unique versatility and strength of a HTF is achieved by combining the capabilities of helicopters—speed, agility, and firepower—with those of the infantry and other combat arms to form tactically tailored helicopterborne task forces that can be employed in low, mid, and high intensity environments.

1005. Helicopterborne Forces

a. Organization. Normally, the helicopterborne force, as a part of a Marine Air-Ground Task Force (MAGTF), is an integrated force tailored to a specific mission under the command of a single commander. Task organization is essential in the conduct of helicopterborne operations and is accomplished by employing an air-ground task force. The organization of forces may include some or all of the elements of the combined arms team.

b. Considerations for Task-Organizing Helicopterborne Forces

(1) The availability of aviation assets is normally the major factor in determining helicopterborne task organization.

(2) The task organization is determined and announced early in the planning process. It may be included in the warning order.

(3) The helicopterborne force is organized with sufficient combat power to seize initial objectives and protect LZs, and with sufficient CSS and accompanying supplies, to sustain a rapid tempo until follow-on or linkup forces arrive, or until the mission is completed.

(4) The helicopterborne force should provide a mission specific balance of mobility, combat power, and staying (sustaining) power.

(5) The required combat power should be delivered to the objective area as soon as possible, consistent with aircraft and PZ capacities, to provide surprise and shock effect.

(6) To perform its mission, a helicopterborne force should arrive intact at the LZ. The force must be tailored to provide en route security and protection from the PZ, throughout the entire flight route(s), and at the LZ.

(7) An effective command and control (C^2) system must be developed for all helicopterborne operations. The MAGTF commander considers his C^2 systems as he develops his task organization.

(8) CS elements are normally placed in direct support (DS) to the helicopterborne force to ensure close coordination and continuous, dedicated support throughout an operation.

c. Capabilities. A helicopterborne force provides commanders with truly unique capabilities. No other ground force on the battlefield can respond to a tactical situation and move considerable distances as quickly as a helicopterborne force. They can extend the battlefield, move with great agility, and rapidly concentrate combat power. Specifically, helicopterborne forces can—

- Attack enemy positions from any direction.
- Delay a much larger force without becoming decisively engaged.
- Overfly or bypass barriers and obstacles and strike objectives in otherwise inaccessible areas.
- Conduct deep attacks and raids beyond the forward line of own troops (FLOT) or point of contact, using helicopters to insert and extract forces.
- Rapidly concentrate, disperse, or redeploy to extend the area of influence.
- Provide responsive reserves allowing commanders to commit a larger portion of their forces to action.
- React rapidly to tactical opportunities and necessities; conduct exploitation and pursuit operations.
- Rapidly place forces at tactically decisive points in the battle area.
- Provide surveillance or screen over a wide area.
- React to rear area threats.
- Rapidly secure and defend key terrain such as crossing sites, road junctions, or bridges.
- Bypass enemy positions; achieve surprise.
- Conduct operations under adverse weather conditions and at night to facilitate deception and surprise.
- Conduct fast paced operations over extended distances.
- Conduct economy of force operations over a wide area.
- Rapidly reinforce committed units.

d. Limitations. A helicopterborne force is light, mobile, and relies on helicopter support throughout any helicopterborne operation. As such, they may be limited by—

- Severe weather, extreme heat and cold, and other environmental conditions such as blowing snow and sand that limit flight operations or helicopter lifting capability.
- Reliance on air lines of communications.
- Enemy aircraft, air defense, and electronic warfare action.
- Reduced ground mobility once inserted.
- Availability of suitable LZs and PZs.
- Available nuclear, biological, and chemical (NBC) protection and decontamination capability.
- Reduced vehicle mounted antitank weapon systems.
- Battlefield obscuration that limits helicopter flight.
- High fuel and ammunition consumption rates.
- Limited accessibility to supporting arms, especially indirect fires.

e. Vulnerabilities. Helicopterborne forces use the helicopter to move and close with the enemy. Initial assault elements must be light and mobile. They are often separated from weapon systems, supporting arms, equipment, and materiel that provide protection and survivability on the battlefield. Thus, a HTF is particularly vulnerable to—

- Attack by enemy air defense weapon systems during the movement phase.
- Attack by NBC systems, because of limited NBC protection and decontamination.
- Attacks (ground, air, or artillery) during the loading and unloading phases and at other times when the infantry is not dug in.
- Electronic warfare (jamming), due to the heavy reliance on radio communications for command and control.

1006. Helicopterborne Task Force

a. General. The helicopterborne force is a task-organized, tactically tailored, combined arms team consisting of combat, CS, and CSS under the

command of a single commander, who is supported by MAGTF aviation.

b. Unity of Command. When an HTF is formed, the most important fundamental consideration of combined arms for the force is unity of command (effort). Unity of command promotes coordinated action toward a common goal which is required by an HTF to complete its mission. Commanders in a helicopterborne operation must develop in their staffs and subordinates the desire to cooperate, not only among themselves but with other elements of the command.

c. Communications

(1) Command and Control. Command and control within the HTF is executed with a variety of communications means to span the full spectrum of assault support operations. The UH-1 may be tasked as a C^2 element for a helicopterborne operation. The helicopterborne unit commander and helicopter coordinator (airborne) (HC[A]) may embark in the same aircraft for coordination and making of timely decisions. To support a helicopterborne force over a widely dispersed area, emphasis is placed on compact, lightweight, airtransportable, and long-range equipment. A heavy reliance is placed on single channel communications such as very high frequency (VHF)/frequency modulation (FM), high frequency (HF)/single side band (SSB), and satellite communications (SATCOM).

(a) Real time C^2 capabilities will be constrained by the availability of portable, reliable, and secure communications. The HTF must depend largely on a single channel radio because of its flexibility, range, and speed of set up.

(b) Subordinate elements in the task force may range beyond multichannel capabilities and radio transmissions, and transmissions may be unintelligible due to enemy electronic countermeasures (ECM). As a result, subordinate commanders of the task force will be required to make decisions sometimes without being in contact with the MAGTF commander.

(c) As the HTF fights the battle and the distances become extended, communications for C^2 become less sophisticated. The task force must make extensive use of airborne or unattended FM retransmission, amplitude modulation capabilities, and SATCOM. Ground or air messengers should be used when possible.

(2) Radio Nets. A dynamic mix of air-to-air, air-to-ground, and ground-to-ground radio nets are used to provide the necessary responsiveness and flexibility for helicopterborne C^2. Appendix B of FMFM 3-30, *Communications*, provides a description of MAGTF nets which can be selectively used to meet the communications requirements for C^2 of helicopterborne operations. In addition to commonly employed doctrinal nets, internal radio links may be established to meet specific unit requirements.

1007. Employment of Helicopterborne Operations

a. General. Helicopterborne operations are high risk, high payoff operations, that can, when properly planned and vigorously executed, drastically extend a commander's area of operation. This extension of a commander's area of operation enables the commander to execute operations in areas ranging beyond the capability of ground forces.

b. Coordination Between Ground and Aviation Commanders. Helicopterborne operations require close coordination between the commander of the ground unit to be lifted and the HC(A). The HC(A) is an experienced naval aviator operating from an aircraft to direct airborne coordination and control of helicopterborne operations. When no HC(A) has been designated, the helicopter transport commander performs this function within capabilities.

(1) Coordination should begin at the earliest opportunity in the planning phase of the operation.

(2) When possible the two commanders should be collocated during the air movement and the initial stages of the landing. This can often be best accomplished through the use of a C^2 helicopter. (See chapter 2, par. 2005c.)

(3) The primary responsibility of the HC(A) is to coordinate the air movement of personnel and equipment into designated LZs. The HC(A) supports the ground commander's concept of operations.

(4) While the air movement phase is primarily the HC(A)'s responsibility, the ground commander must be prepared to recommend primary and alternate approach and retirement lanes and assist in navigation. The ground commander must confirm the proper LZ.

(5) In coordination with the ground commander, the HC(A) has the authority to switch to the alternate LZ if enemy actions indicate that serious helicopter losses will result from using the primary zone. The HC(A) does not have the authority to land the wave anywhere other than the primary or alternate LZs. If both commanders agree that landings in neither are tactically possible, the commanders must agree on another suitable zone.

1008. Tactical Employment of a Helicopterborne Task Force

a. General. The tactical employment of a HTF is different from other types of infantry operations. An HTF is employed judiciously and on missions that require—

- Massing or shifting combat power rapidly.
- Using surprise.
- Using flexibility, mobility, and speed.
- Gaining and maintaining the initiative.
- Extending the depth, width, or breadth of the battlefield.

b. Operational Guidelines. An HTF is normally a highly tailored force specifically designed to hit fast and hard. They are best employed in situations that provide the force a calculated advantage due to surprise, terrain, threat, or mobility. The principles of tactical employment of helicopterborne operations are basic guidelines that govern the planning and execution of helicopterborne operations. They are as follows:

(1) The HTF should normally be assigned missions that take advantage of their superior mobility and should not be employed in roles requiring deliberate operations over an extended period of time.

(2) The helicopterborne force fights as a combined arms team.

(3) The availability of critical aviation assets is a major factor in any operation.

(4) Operation planning must be centralized and precise; execution must be aggressive and decentralized.

(5) The helicopterborne operation may be conducted at night or during adverse weather, but requires more planning and preparation time in those cases.

(6) Unit tactical integrity should be maintained throughout a helicopterborne operation. When planning loads, squads are normally loaded intact on the same helicopter, with platoons in the same wave. This ensures fighting unit integrity upon loading and unloading.

(7) Fire support planning must provide for suppressive fires along flight routes and in the vicinity of landing zones. Priority for fires must be to the suppression of enemy air defense (SEAD) systems.

(8) Infantry operations are not fundamentally changed by integrating aviation units with infantry; time and distances are dramatically changed, however.

(9) Helicopterborne forces are most effectively employed in environments where limited lines of communications are available to the enemy and where he lacks air superiority and effective air defense systems.

Chapter 2

Preparation for Combat

2001. General

Helicopterborne forces must prepare for operations by following troop leading procedures and organizing for a specific mission. This chapter discusses procedures and organization which will provide a basis for detailed discussion of helicopterborne operations in later chapters. The following sections discuss combat preparation procedures for helicopterborne operations:

a. Intelligence preparation of the battlefield.

b. The threat.

c. Task organizing for helicopterborne operations.

d. Command, control, and communications.

2002. Intelligence Preparation of the Battlefield

a. General. Intelligence preparation of the battlefield (IPB) is more important in helicopterborne operations than any other operation because of the vulnerability of the aircraft. IPB is a systematic approach to analyzing the enemy, weather, and terrain in a specific geographic area. It integrates enemy doctrine with the weather and terrain as they relate to the mission and the specific battlefield environment. This is done to determine and evaluate enemy capabilities, vulnerabilities, and probable courses of action. The main thrust of IPB is to support commanders and their staffs in the decision-making process. It results in a graphic intelligence estimate that portrays probable enemy courses of action. Once hostilities begin and current data becomes available, the IPB intelligence estimate becomes dynamic, changing with the immediate situation on the battlefield.

IPB is a sequential process of intelligence analysis that orients on the assigned areas of operations and interest and the enemy forces that are expected to be operating in those areas. The five logical steps include threat evaluation, area of operation and interest evaluation, terrain analysis, weather analysis, and threat integration.

b. Graphics. The use of graphics is key to IPB. Threat evaluation and threat integration are accomplished through the analytical techniques known as templating. A template is a graphic illustration of enemy force structure, deployment, or capabilities normally drawn to scale. It provides a basis for command judgment and decisions affecting resource allocation. It is used as a comparative data base to integrate what is known about the enemy with a specific weather and terrain scenario. Templates enable planners to visualize enemy capabilities, predict likely courses of action before the battle, and confirm or refute them during combat. The four principal templates are developed during the IPB process:

(1) Doctrine. Enemy doctrinal deployment for various types of operations without constraints imposed by weather and terrain. Composition, formations, frontages, depths, equipment numbers and ratios, and high value targets are types of information displayed.

(2) Situation. Depicts how the enemy might deploy and operate within the constraints imposed by the weather and terrain.

(3) Event. Depicts locations where critical events and activities are expected to occur and where critical targets will appear.

(4) Decision points. Depicts decision points keyed to significant events and activities; the intelligence estimate in graphic form.

c. Weather. Planners must not underestimate the effects of weather on helicopterborne operations. It has a significant impact on both friendly and enemy air capabilities. Helicopter performance, in particular, is seriously affected by temperature and humidity extremes, as well as, wind velocity. Weather factors also affect conditions of LZs, air avenues of approach, and threat air defense weapons.

d. IPB Products. IPB products are routinely used by helicopterborne task forces throughout the planning phases. Helicopterborne operations are high-risk operations at best, and they must be planned with the best intelligence support available. Higher headquarters must be prepared to provide detailed intelligence information and support to any subordinate unit that has been assigned a helicopterborne mission.

2003. Threat

a. General. Threat tactics will vary among different enemy and different situations. However, the primary threat tactics against helicopterborne operations can be broken down into four major areas:

- Air defense fires (including small arms).
- Fixed-wing and rotary wing aircraft.
- Electronic warfare (EW).
- Analysis of threat reaction to LZ operations.

To counter the threat, it takes knowledge of enemy doctrine, tactics, and equipment to enable helicopterborne forces to find and exploit enemy weak points. IPB can be used to a great advantage to exploit the weaknesses of the enemy because a major portion of the IPB is understanding the enemy.

b. Air Defense Fires. Vulnerability to air defense fires must be recognized and compensated for by effective suppressive measures and increased emphasis on accurate, timely, intelligence of the enemy.

c. Fixed-Wing and Rotary Wing Aircraft. The capabilities and limitations of threat aircraft within the area of operation must be understood and all measures to minimize the risk of encounter must be taken.

d. Electronic Warfare. Threat EW capabilities that would influence the helicopterborne operation to include: jamming, direction finding and monitoring of communications, or jamming and direction finding involving friendly radars must be considered and appropriate ECM employed.

e. Analysis of Threat Reaction to LZ Operations. Analysis of threat capabilities to interdict friendly LZs with ground forces, artillery, and close air support (CAS) must be accomplished during the planning phase of the operation.

2004. Task-Organizing for Helicopterborne Operations

a. General. As stated in chapter 1, helicopterborne operations are conducted by task-organized forces called HTFs. This task organization involves organizing both ground and aviation assets to accomplish the *ground tactical plan*. Helicopterborne operations task organization requires coordination, planning, and execution between the

ground commander and aviation commanders to accomplish the ground tactical plan. The HTF is normally part of a MAGTF and designed to accomplish a specific mission. When organizing forces for combat, predesignated and well understood command relationships ensure that the force will fight as a cohesive, coordinated team.

(1) The formation of a helicopterborne task organization will normally be directed by the MAGTF commander. The MAGTF commander can allocate dedicated air resources. The directing commander allocates assets and defines authority and responsibility by designating command and support relationships. The directing commander forms the helicopterborne task organization early in the planning stage.

(2) Battalion is the lowest level staffed with sufficient personnel to plan, coordinate, and control a helicopterborne operation. When company-sized operations are conducted, the predominance of planning occurs at battalion or higher level.

(3) A helicopterborne operation exists until completion of a specified mission. Once the specific mission is completed, aviation and other elements are returned to the control of their parent unit.

b. Organization of the Helicopterborne Task Force

(1) Helicopterborne Unit Commander (HUC). The HUC is responsible for the accomplishment of the ground tactical plan. He is also responsible for coordinating aviation and other support required in planning and executing the complete helicopterborne mission.

(2) Helicopterborne Task Force. The HTF is task-organized to execute the ground tactical plan. The force is structured around an infantry unit and can vary in size from a reinforced rifle company to a reinforced Marine regiment. The force will include appropriate CS and CSS units, which are task-organized into the helicopterborne force. Normally there is only one ground element in a helicopterborne operation although units may be landed in different locations. The HUC may be assigned his mission by the MAGTF commander, or the ground combat element (GCE) commander, depending on the situation and scope of the operation. The HUC ensures that ground operations are conducted according to his commander's direction and intent and assists his commander in integrating the helicopterborne operation into the overall operational plan. CS and CSS is task-organized to provide the full range of support necessary to accomplish the helicopterborne mission. Commanders supporting the helicopterborne operation ensure that support operations are conducted according to the needs of the total helicopterborne force, to include both ground and supporting aviation units. The primary areas requiring dedicated support include establishing and operating PZs, LZs, and forward arming and refueling points (FARPs).

(3) Aviation Support. Aviation support is task-organized to transport the helicopterborne force and provide the required close and deep air support. Additionally aviation support includes all or a portion of the remaining functions of Marine aviation in varying degrees, based on the tactical situation and the helicopterborne force's mission. The designated aviation mission commander ensures that all supporting operations are conducted according to the needs of the ground tactical plan and supports the helicopterborne force commander in establishing and executing the air movement plan.

c. Assets for Helicopterborne Operations.

From the commander's point of view, it is important that he is aware of what assets he has, what role these assets play when organizing an HTF, and what must be considered to utilize these assets in order to form a helicopterborne operation for

accomplishing the ground tactical plan. The following are assets that the commander can utilize for a helicopterborne operation. They are the infantry units from which the HTF is formed, the equipment that can provide capabilities for helicopterborne operations, the missions that helicopterborne operations perform, and the support forces that support and provide services for helicopterborne operations.

(1) Infantry

(a) Organization. Infantry units normally form the nucleus of the helicopterborne force. To capitalize on the helicopter's mobility, all units must be prepared to assume helicopterborne missions, regardless of the previous mode of mobility. Infantry units can range from a reinforced platoon through a reinforced regiment.

(b) Considerations for Mobility. The disposition of the infantry unit's vehicles, during the helicopter movement, is an important consideration. When infantry units conduct helicopterborne operations, the HUC must decide what to do with unit vehicles, attached vehicles, and vehicles in support of the operation. Vehicles may be flown in with the helicopterborne force; flown in subsequent to the arrival of the helicopterborne force; driven in by the helicopterborne force subsequent to the initial assault; attached to another ground unit (such as a linkup force) for movement to the objective area; left in an assembly area until the helicopterborne force returns; and staged in position to provide support for the helicopterborne force or adjacent units. Other considerations include the following:

- Ground mobility is limited once the unit is inserted unless vehicles are provided.
- Communication range is limited to that of man portable radios.
- Range of reconnaissance units may be limited unless they are lifted in the vicinity of the objective area.
- Antiarmor capability is reduced.
- CS and CSS will be austere.
- Air lines of communications must be planned for sustainment.

(2) Transport (Lift) Helicopters

(a) Organization. The helicopterborne force would normally be supported by one or more reinforced helicopter squadrons (depending on the size of the operation).

(b) Role. Transport helicopters operate under the control of the helicopter unit commander or his designated mission commander.

(c) Missions. Typical missions include—

- Tactical mobility for troops, equipment, and weapon systems by internal and external load.
- Resupply by internal and external load.
- Backup medical evacuation (MEDEVAC).

(3) Attack Helicopters

(a) Organization. Task-organized.

(b) Role. Attack helicopters support the lift and the helicopterborne force by providing direct and suppressive fires in the absence of artillery and other supporting fires or in conjunction with other supporting fires.

(c) Missions. Typical missions include—

- Escorting (protect) transport helicopters from the PZ to the LZ as dictated by the enemy.
- Suppressing enemy air defense artillery and other weapons en route to and during insertions and/or extractions.
- Providing preparatory and/or suppressive fires in the vicinity of LZs or objectives.

- Overwatching the LZ and objective areas to neutralize enemy resistance and to block enemy attempts to reinforce the objective area.
- Providing reconnaissance and security in objective areas.

(4) Vertical Assault Helicopters. All transport helicopters are capable of carrying both personnel and cargo, however, planning procedure is to utilize the aircraft for their primary mission first (i.e., CH-46 for troops, CH-53 for cargo, and UH-1 for special operations and C^2).

(5) Air Reconnaissance

(a) Organization. Task-organized.

(b) Role. Air reconnaissance elements provide reconnaissance and limited security for the helicopterborne force during all phases of the operation and fill the void created by the possible absence of ground reconnaissance elements.

(c) Missions. Typical missions include—

- Reconnaissance of PZs, flight routes, LZs, and objectives.
- Screening forward (or all-round) of ground forces to provide limited security and early warning.
- Providing downed aircraft security.

(6) Artillery Fire Support

(a) Organization. Artillery that can be moved by helicopter or that can fire into the helicopterborne objective area, is normally attached to or placed in DS of the helicopterborne force.

(b) Role. Artillery units in helicopterborne operations must be ready to move quickly and frequently to prepared LZs and objectives and to suppress enemy artillery and air defense fires.

(c) Missions. Typical missions include—

- SEAD along flight routes and in the vicinity of LZs.
- LZ preparation.
- Conducting artillery raids.
- Delivering artillery's family of scatterable mines (FASCAM).

(7) Air Defense

(a) Organization. The helicopterborne force normally receives, in DS, a tactically tailored low altitude air defense (LAAD) team or platoon equipped with light, air-transportable, short-range air defense systems. Air defense assets must be tailored to place high reliance on man-portable systems such as the Stinger missile system. Stinger teams can be attached to infantry units, if necessary, for movement. As a general rule, LAAD unit commanders are attached when the tactical situation or mission makes it infeasible for the parent LAAD unit commander to exercise effective control for the accomplishment of assigned missions. An example of the use of LAAD units as attachments would include an independent or semi-independent mission such as a helicopterborne assault.

(b) Role. In helicopterborne operations, Stingers may fly with the lead elements in order to be in place to protect follow-on echelons in the objective area. Stinger teams are best suited for this role.

(c) Missions. Typical missions include—

- Providing air defense of high value locations including PZs, LZs, objective areas, helicopter FARPs, and laager sites.
- Providing direct fires for ground defense.

(8) Electronic Warfare

(a) Organization. Task-organized.

(b) Role. Provide EW planning and operations support to the HTF.

(c) Missions. Typical missions could include—

- Disruption of enemy command, control, and communications.
- Degradation of enemy fire support and air defense radio nets.
- Provision of ground surveillance (radar).
- Collection of electronic intelligence.

(9) Engineers

(a) Organization. An engineer platoon can be placed in DS of the HTF. In most situations, engineers would be attached to infantry units for movement but would revert to general support (GS) when communications with parent headquarters is reestablished.

(b) Role. Engineers in the HTF role must be organized to move with infantry and to provide mobility, countermobility, and survivability construction using light equipment (chain saws, handtools), demolitions, natural resources, and ingenuity. Light engineer equipment, such as small earth movers or backhoes, may be moved by medium lift helicopters.

(c) Missions. Typical missions include—

- Constructing and improving PZs and LZs.
- Constructing expedient countermobility obstacles using natural materials and demolitions.
- Helping the infantry dig in.
- Emplacing minefields.
- Fighting with infantry.
- Breaching obstacles.

(10) Reserve Elements. Because of their superior mobility, HTFs require smaller reserves than do other forces. During helicopterborne operations, each subordinate maneuver unit may be given an on-order mission to reinforce or assume another unit's mission, or to revert to the task force reserve.

(11) Combat Service Support Elements (CSSEs). The HTF may be supported by a dedicated, tactically tailored CSSE that provides mission specific support to the helicopterborne force throughout the operation.

2005. Command and Control

a. General. Because the battlefield over which the helicopterborne force operates may be extended well beyond the norm, special consideration must be given to the C^2 of operations. C^2 is the process of directing and controlling the activities of military forces in order to attain an objective. A helicopterborne C^2 system includes the procedures, facilities, equipment, and personnel to gather information, make plans, communicate changes, and control all ground and air elements in pursuit of the objective. A helicopterborne C^2 system must communicate orders, coordinate support, and provide direction to the helicopterborne force in spite of great distances, enemy interference, and the potential loss of key facilities and individuals. Above all, this system must function quickly and effectively, thus allowing the helicopterborne force to receive and process information and to make decisions faster than the enemy.

b. Command and Control Planning. The MAGTF commander must address C^2 requirements early in the planning phase of any operation. The MAGTF commander must establish an effective C^2 system which allows him to direct diverse, widely dispersed air and ground elements between the initial PZ and the final objective. The C^2 system may be subjected to degraded communications due to the extended distances over which the helicopterborne force must operate and/or enemy jamming. Although an effective C^2 system

must include provisions for two-way radio communications, the MAGTF commander must develop a plan and a system which allows execution despite degraded radio communications. The key to successful helicopterborne operations C^2 lies in precise, centralized planning and aggressive, decentralized execution. The MAGTF commander ensures successful helicopterborne C^2 by the following:

(1) **Effective Task-Organizing.** All assets must be tailored into discrete, task-organized elements each with two-way radio communications, unity of command, clearly defined missions and objectives, and provisions for maintaining unit integrity throughout the operation. An effective task organization, with each element having a clearly defined mission, allows the HTF the flexibility to decentralize execution and ensure mission success despite degraded communications, the fog of battle, or unexpected enemy reaction.

(2) **Precise Planning.** Helicopterborne operations must be precisely planned and well briefed before execution so that each subordinate leader knows exactly what is expected of him, knows the commander's intent, and knows he can execute his mission despite the loss of radio communications. Contingencies or alternatives must be built into each plan to allow for continuation of the mission in a fluid environment. Most precise planning is done through the use of *time driven or event driven* actions. Time driven actions occur at specified times. Event driven actions occur relative to each other. For example:

(a) A time driven action might be the firing of an LZ artillery preparation precisely from H–5 minutes to H–1 minute. If previously planned, this can be executed with degraded communications.

(b) An event driven action might be inserting Company G into the alternate LZ if Company E (the lead company) makes enemy contact on the primary LZ. If previously planned, this event will occur properly without the need for lengthy radio communications.

(3) **Decentralized Control.** Although it is centrally planned, helicopterborne operation execution is decentralized. Subordinate commanders should be given the maximum possible freedom of action (consistent with safety and mission accomplishment considerations) to ensure mission accomplishment.

(4) **Helicopterborne Radio Nets.** Radio nets to facilitate ground-to-ground, air-to-air, and ground-to-air communications are established to provide for the timely flow of information and redundancy in capability.

c. Command and Control Helicopters. The ground commander may be airborne with the HC(A) in a C^2 helicopter. This allows the ground commander to personally observe the operation, communicate with his subordinates, and arrive at a timely decision in coordination with the helicopter commander.

(1) A C^2 helicopter is used to—

- Observe the LZs and change them, if necessary.
- Observe the initial waves landing.
- Coordinate and influence the attack of subordinate units in the LZ.

(2) When commanding from a helicopter, the ground commander forms a command group to accompany him.

(3) In a large helicopterborne operation with multiple LZs, subordinate commanders may require C^2 helicopters to control and coordinate their units.

(4) As a rule, the ground commander commands airborne only during air movement and the initial stages of the landing. When a major portion of his assault elements have landed, the commander should displace to a forward command post (CP) on the ground. The

commander should guard against trying to routinely control ground operations from the air, which can lead to oversupervision of subordinate units and can sometimes give an inaccurate picture of the true tactical situation. The commander is vulnerable to enemy air defense weapons while airborne.

d. Key Personnel and Elements in C^2. The key players and communications modes in helicopterborne C^2 are as follows:

(1) MAGTF Commander. The MAGTF commander's presence and role ensures a unity of command throughout the operation. He must locate where he can maintain communications with his subordinate commanders.

(2) Helicopterborne Unit Commander (HUC). The HUC is the ground officer who has been designated commander of the helicopterborne force and who is charged with execution and accomplishment of the ground tactical plan. His unit comprises the helicopter landing force. Depending on the size and scope of the MAGTF, the HUC may also be the GCE commander. Normally, there is only one GCE in a helicopterborne ground unit although there may be multiple lifts and landings. The ground unit commander is responsible for execution of the ground tactical plan. As in any operation, he must move where he can see the battlefield and where he can control the operation. In situations where the enemy allows, he would be airborne during the movement and insertion phases. At other times, he fights the battle from a tactical CP deployed well forward.

(3) Aviation Mission Commander. The aviation mission commander is tasked with providing all or a portion of the functions of Marine Corps aviation in varying degrees based on the tactical situation and the MAGTF mission and size. These functions are air reconnaissance, antiair warfare, assault support (helicopterborne operations), offensive air support, EW, and control of aircraft and missiles. In helicopterborne operations, the aviation combat element (ACE) is organized around an aviation headquarters and varies in size from a reinforced helicopter squadron to one or more helicopter group(s). It would include those aviation commands (including air control agencies), combat, CS, and CSS units required by the situation. Normally there is only one ACE in a MAGTF.

(4) Combat Service Support Commander. The CSSE is task-organized to provide the full range of CSS necessary to accomplish the MAGTF helicopterborne mission. Depending on the assigned mission, it is task-organized to provide any or all of the following support: supply, maintenance, transportation, engineer, helicopter support team (HST), prisoner of war (POW), and terminal guidance services. In most helicopterborne operations, the CSSE will provide smaller task organizations: combat service support detachments (CSSDs) and mobile combat service support detachments (MCSSDs). Normally, there is only one CSSE in a MAGTF. For more on MAGTF organization read FMFM 2, *The Marine Air-Ground Task Force.*

(5) Tactical Air Coordinator (Airborne) (TAC[A]). The TAC(A) is an extension of the direct air support center (DASC). He coordinates with the ground commander's tactical air control party, subordinate forward air controller (airborne) (FAC[A]), and the fire direction centers of artillery and naval gunfire. The TAC(A) is normally the senior coordinator having authority over all aircraft operation within his assigned area.

(6) Helicopter Coordinator (Airborne). The HC(A) is a naval aviator operating from an aircraft, who has been delegated authority to perform specific coordination and control functions of helicopter operations, and provide situational awareness to the assault support force (helicopterborne force) during a specific helicopter evolution. The HC(A) may—

- Directly support a mission commander.
- Function as an airborne extension of the helicopter direction center (HDC) or DASC, when a DASC or HDC are in support of the mission commander.
- Be employed as an extension of the DASC or HDC for the purpose of coordinating assault support activities that do not warrant the assignment of a mission commander. When employed as an extension of the DASC/HDC, the HC(A) will be responsible for the execution of those specific functions assigned to him by those agencies. He may be assigned for initial assaults, subsequent assaults, or as determined by the mission commander. When assigned, the HC(A) is responsible for coordinating the activities of all helicopters in his assigned area. If employed in conjunction with the TAC(A) or FAC(A), and no mission commander is assigned, the relationship between the two will be established by the tactical air commander or his designated representative. When an HC(A) has not been designated, the HTC shall discharge the duties of the HC(A) within the limits of his authority. To facilitate timely and coordinated decisions affecting helicopterborne assaults, the HC(A) and a representative of the HUC should be assigned to the same aircraft, if feasible. The HC(A) will normally provide information concerning—
  - Weather along the approach and retirement routes and in the LZs.
  - Enemy operations observed along the approach and retirement routes.
  - Alterations of helicopter routes.
  - Employment of supporting arms, including TAC(A) activities.

(7) Helicopter Unit Commander. The helicopter unit commander is the senior Marine aviator designated commander of the helicopter unit tasked to support a helicopterborne operation. Depending on the size and scope of the MAGTF, he may also be the ACE commander. He is responsible for planning and executing the helicopter transport functions relative to the assigned helicopterborne mission. It is his responsibility to establish liaison with the HUC (the commander responsible for the ground tactical plan) to conduct concurrent and parallel planning.

(8) Helicopter Transport Commander (HTC). The HTC is an experienced aviator in command of the assault support helicopter flight taking part in a helicopterborne mission. The HTC shall function as the HC(A) for missions when no HC(A) is assigned.

(9) Flight Leader. The flight leader is a pilot qualified in model (PQM) or helicopter aircraft commander designated in writing as a flight leader by the helicopter unit commander. In mixed flights, including assault support helicopters and attack helicopter escorts, the overall flight leader is the HTC.

(10) Flight Coordinator. The flight coordinator is an experienced attack helicopter commander of the escort flight who is normally designated by the HTC to coordinate assets during the insertion and extraction of assault support helicopters. Unless specifically briefed otherwise, the senior attack helicopter commander of the flight will assume the following duties of the flight coordinator:

- En route flight clearance.
- LZ identification.
- LZ preparation.
- Communications and coordination within the flight.
- Other duties as directed by the transport commander.

Utilization of flight coordinators is particularly effective on resupply and MEDEVAC missions where expediency is necessary, on reconnaissance patrol insertions/extractions where minimal transport helicopter exposure is desirable, and on assaults where multiple LZs are used.

(11) Forward Air Controller (Airborne). The FAC(A) is an aviator and FAC who is airborne in the area of operations in a helicopter or fixed-wing aircraft. His primary function is the detection and destruction of enemy targets through CAS and deep air support. The FAC(A) may be assigned either directly to support a given ground unit or as a subordinate to a TAC(A) or HC(A) to provide air control as required on various types of operations. The FAC(A) should have a working knowledge of fire support coordination procedures, visual reconnaissance, and artillery/naval gunfire spotting techniques. In the performance of his mission, the FAC(A) performs the following tasks within his assigned area of responsibility as each situation dictates:

- Detects enemy targets for neutralization and destruction.
- Controls CAS missions.
- Controls deep air support/interdiction missions when directed.
- Controls LZ preparations.
- Controls armed helicopter fire suppression missions.
- Marks targets and LZs.
- Controls artillery and naval gunfire missions when required.
- Conducts visual reconnaissance.
- Reports intelligence information to the appropriate ground or air control agency.

(12) Initial Terminal Guidance Teams. Initial terminal guidance teams of Force Reconnaissance Company or Reconnaissance Battalion, Marine division, have the inherent capability to provide terminal guidance for initial helicopter waves in the LZs. Teams are composed of personnel who are inserted into the LZs in advance of the landing zone control team (LZCT). They execute prelanding reconnaissance tasks and establish and operate signal devices for guiding the initial helicopter waves from the initial point to the LZ. The initial terminal guidance teams may be the first elements to make contact with the enemy. It is of the utmost importance that they report promptly any enemy activity which may counter the landing. The use of initial terminal guidance teams may increase the difficulty or even prevent the use of LZ preparation fires due to the presence of friendly troops in or around the LZ. Duties of the team may include—

- Determining obstructions in the LZ, including radiological hazards.
- Giving advance notice of enemy positions.
- Establishing homing and guidance devices.
- Recommending action to be taken by following waves.

If LZ preparation or other factors precludes use of initial terminal guidance teams, a homing device may be placed in the zone by an aerial drop immediately after preparation is concluded or other activities preventing the use of terminal guidance personnel terminate.

(13) Helicopter Support Team. The HST is a task organization whose composition is formed and equipped for employment in PZs and LZs. It facilitates the pickup, movement, and landing of helicopterborne troops, equipment and supplies, and the evacuation of selected casualties and POWs. The team usually includes a headquarters element, a helicopter control element, and an LZ platoon. The LZ platoon includes personnel to provide supply and engineer support functions. The helicopter control element consists of a LZCT provided by the ACE commander when necessary and may include personnel to provide refueling and emergency maintenance.

(14) Pickup Zone Control Officer (PZCO). A PZCO is designated from the supported unit for each PZ to be used. The PZCO organizes, controls, and coordinates operations in the PZ and pushes elements out. He operates on a designated tactical net and is prepared to assist in executing needed changes. The PZCO is the key individual during night operations or when multiple subordinate elements are being lifted from the same PZ.

(15) Subordinate Unit Commanders. Subordinate unit commanders normally function as they would in any other infantry task force. Each must be prepared, however, to receive other elements for movement.

(16) Command Post (CP). The CP provides C^2 for the execution of helicopterborne operations. It must be mobile and well forward. It is normally helicopter lifted into the objective area soon after the initial echelon. A C^2 helicopter may serve as a CP if enemy air defense systems allow.

(17) Combat Operations Center (COC). The COC provides planning for future operations and ongoing operations as directed by the commanding officer. Functions of the COC include:

- Monitor current operations and maintain current enemy and friendly situations.
- Gather and disseminate intelligence.
- Keep higher and adjacent organizations informed of the friendly situation; submit recurring reports.
- Provide liaison to higher and adjacent organizations.
- Coordinate CS, CAS, aviation, engineer, air defense, and advise the commander on the use of CS for current and future operations.
- Monitor airspace and supporting fires.
- Continue planning for future operations; oversee the preparation of all contingency plans.
- Issue combat and warning orders as necessary.

(18) Rear. The rear is normally located in the logistical trains and coordinates all logistical and personnel operations and requirements. The administration logistics center is the nerve center of the rear and coordinates CSS for the HTF.

e. Communications

(1) Command and Control. C^2 within the HTF is executed with a variety of communications means to span the full spectrum of assault support operations. The UH-1 may be tasked as a command and control element for a helicopterborne operation. The HUC and HC(A) may embark in the same aircraft for coordination and making of timely decisions. To support a helicopterborne force over a widely dispersed area, emphasis is placed on compact, lightweight, air-transportable, and long-range equipment. A heavy reliance is placed on single channel communications such as VHF/FM, HF/SSB, and SATCOM.

(a) Real time C^2 capabilities will be constrained by the availability of portable, reliable, and secure communications. The HTF must depend largely upon a single channel radio because of its flexibility, range, and speed of set up.

(b) Subordinate elements in the task force may range beyond multichannel capabilities and radio transmissions, and transmissions may be unintelligible due to enemy ECM. As a result, subordinate commanders of the task force will be required to make decisions sometimes without being in contact with the MAGTF commander.

(c) As the HTF fights the battle and distances become extended, communications for C^2 become less sophisticated. The task force must make extensive use of airborne or unattended FM retransmission, AM capabilities, and SATCOM. Ground or air messengers should be used when possible.

(2) Radio Nets. A dynamic mix of air-to-air, air-to-ground, and ground-to-ground radio nets are used to provide the necessary responsiveness and flexibility for helicopterborne C^2. Appendix B of FMFM 3-30, *Communications*, provides a description of MAGTF nets which can be selectively used to meet the communications requirements for C^2 of helicopterborne operations. In addition to commonly employed doctrinal nets, internal radio links may be established to meet specific unit requirements.

Chapter 3

Planning

Section I. Planning Helicopterborne Operations

3101. Coordination

Coordination between the ground commander and the helicopter commander should begin at the earliest opportunity in the planning phase of the operation. While the ground commander and helicopter commander must plan the operation together, the ground commander's concept of operations on the ground must drive all planning for the helicopterborne operation. A central consideration for the ground and helicopter commander in planning a helicopterborne operation is the enemy air defense situation.

The ground commander directs the formulation of the ground tactical plan, the landing plan, and the loading plan. For ground, landing, and loading plans, see paragraphs 3303, 3304, and 3306. The helicopter transport commander is principally responsible for formulating the air movement plan. For the air movement plan, see paragraph 3305.

Sortie rates and aircraft types, availability, and capabilities are central factors in planning helicopterborne operations. To achieve the necessary rapid build-up of combat power, a helicopterborne operation requires the massing of helicopters. As a planning figure, a minimum of one-third of the ground unit should be landed in the zone in the first wave.

Planning a helicopterborne operation requires close coordination and liaison at the earliest opportunity between the ground and helicopter forces.

The basis for planning the timing of the operation is L-Hour, the time when the first helicopter in the first lift is to touch down in the LZ.

3102. Overview of Estimate Process

A vital portion of the planning phase is the estimate process. The following are actions that are important parts of the estimate process. Some of these actions are required to initiate the estimate process, some actions are initiated to keep the estimate process in a continual, progressive state based on the evolution of the operation, and some actions are options for the commander to implement based on the battle situation.

a. Command and Staff Action. Planning for helicopterborne operations requires time—time to plan, time to prepare, and time to brief. The helicopterborne force uses the sequence of command and staff actions and troop leading procedures common to other combat operations.

b. Detailed Planning. Planning for helicopterborne operations is as detailed as time permits and should include completion of written orders and plans when time allows. Within time constraints, the helicopterborne force carefully evaluates capabilities and limitations of the total force and develops a plan which ensures a high probability of success.

c. Rapid Planning. Often, however, the fleeting nature of tactical opportunities does not permit adequate planning time and the development of detailed written plans and orders. If time is limited, planning steps must be compressed or conducted concurrently; detailed written plans and orders may be supplanted by standing operating procedure (SOP) or lessons learned in previous training. The development of SOPs and previous training cannot be overemphasized.

d. Information Flow. When an infantry unit is given a helicopterborne mission, the assigning headquarters provides the latest extended weather forecast, intelligence (with emphasis on known or suspected enemy positions and air defense systems), initial fire planning, and many of the terrain considerations relevant to the operation. When a MAGTF command element is established, the infantry unit receives the majority of this information through the efforts of the MAGTF staff. This allows the elements of the MAGTF to concentrate more on detailed planning and spend less time in analysis and aligning raw information. When a MAGTF staff is not available, the elements involved function in much the same manner. Smaller operations and operational requirements arising as a result of fleeting tactical changes will not usually allow time for the establishment of a formal MAGTF command element. Information will be received from higher headquarters. All echelons provide information intended to reduce the planning burden of subordinate units.

e. Battalion Operations. The battalion is the lowest level that has sufficient personnel to plan, coordinate, and control a helicopterborne operation. When company-sized operations are conducted, the bulk of the planning and air-ground asset coordination takes place at the battalion headquarters.

f. Analysis of METT-T. All tactical estimates used in troop leading procedures employ the factors of mission, enemy, terrain and weather, troops and support available, and time available (METT-T). Analysis of METT-T provides data that is used during the estimate process to reach a decision.

Section II. Estimate Process

3201. Analysis of METT-T

The analysis of METT-T is an important part of the estimate process. It formulates the design of the commander's plan of attack and contributes significantly to the estimate of the tactical situation for helicopterborne operations.

a. Mission. Mission analysis is conducted early-on in the estimate process. The mission includes the critical tasks which must be accomplished. The tasks are either specified tasks stated by the order or implied tasks that the commander must deduce. Mission analysis determines not only what must be accomplished, the intent of the commander ordering the mission (the why of the operation), and the limitations (when, where, how) placed by the higher headquarters, but is the basis for deciding on task organization. Once the mission is analyzed and deductions are made, all other factors are considered in terms of their impact on the mission. It is therefore imperative that the mission be understood before continuing the estimate.

b. Enemy. The examination of enemy factors must be as detailed as possible for helicopter operations. Necessary information about the enemy must be obtained before embarking on a helicopterborne operation and certain enemy factors must be considered before planning a helicopterborne operation.

(1) The necessary information includes—

- Identification—who is he?
- Location—where is he and where is he going?
- Disposition—how is he organized; what are his formations?
- Strength—his versus friendly forces.
- Morale—esprit, experience, state of training, regular or reserve.
- Capabilities—EW, NBC, air defense, airborne, airmobile, attack helicopters, mobility (in comparison to the helicopterborne unit).
- Composition—armor, infantry (motorized or light), artillery, combat support.
- Probable courses of action—what is his likely mission or objective, and how will he probably achieve it?

(2) When planning a helicopterborne operation, the following factors about the enemy must be considered:

- Air defense weapons and capability.
- Mobility; particularly his ability to influence potential flight routes and helicopter LZs.
- NBC capability; particularly his ability to react to the insertion.
- Capability to interdict or interrupt helicopter movements with his helicopters or fixed-wing aircraft.
- EW capability.

c. Terrain and Weather. In all military operations, terrain analysis is conducted by the criteria described in the term KOCOA (key terrain, observation, cover and concealment, obstacles, and avenues of approach) and weather. In helicopterborne operations, these factors must be analyzed in relation to their effects on the helicopterborne force during movement to the initial PZ, loading, initial air movement, insertion at the LZ, movement to the objective, and subsequent actions and movements once tasks are accomplished at the objective. Another important consideration in helicopterborne operations is the effect terrain and weather have on visibility.

(1) Key Terrain. Key terrain is mission-dependent; however, in helicopterborne operations, key terrain is not limited to that which

influences the ground scheme of maneuver. It must also be analyzed in terms of—

- PZs and LZs.
- Flight routes.
- Attack helicopter positions.
- Occupation of enemy positions, especially enemy air defense assets.
- Potential FARPS.

(2) Observation. These considerations relate to both enemy and friendly forces and include—

- Enemy visual observation and/or electronic surveillance of PZs, flight routes, and LZs.
- Enhanced friendly observation provided by aerial and ground reconnaissance assets.
- Ease of navigation along flight routes particularly for night or adverse weather operations.

(3) Cover and Concealment

- Terrain masking for low level flight routes and insertions.
- Covered firing positions for attack helicopters.
- PZs and LZs which offer ground forces cover and concealment.

(4) Obstacles. While most obstacles can be bypassed by helicopters, PZs and LZs must be suitable and obstacles which affect the ground scheme of maneuver must be considered.

(5) Avenues of Approach. Air and ground avenues of approach are considered in both offensive and defensive operations from friendly and enemy viewpoints. A good avenue of approach for a helicopterborne force offers—

- A reasonable degree of mobility and few if any natural obstacles to the aircraft.
- Little or no canalization.
- Terrain masking that decreases effectiveness of enemy air defense weapons.
- Cover.
- Concealment.
- Good lines of communications and logistics.
- Ease of linkup with other forces when appropriate.

(6) Weather. Weather information is analyzed for trends. If the operation begins in marginal weather, the commander must consider the possibility that it will deteriorate below acceptable limits during the operation. This may result in an interruption of helicopter support and require changes in planned operations. Considerations include—

- Fog, low clouds, heavy rain, and other factors that limit visibility for pilots.
- Illumination and moon angle during night vision goggles (NVG) operations.
- Ice, sleet, and freezing rain that degrades aerodynamic efficiency.
- High temperatures and/or density altitudes that degrade aircraft engine performance and lift capability.
- Darkness, normally an advantage to well-trained pilots and ground forces.
- High winds (large gust spreads).
- Weather conditions that create hazards on PZs and LZs, such as blowing dust, sand, or snow.

d. Troops and Support Available. Troops and support available encompasses not only troops to be lifted into the objective LZ but all combat power to include CS and CSS available to the helicopterborne force.

(1) Combat Power. The helicopterborne force should have enough combat power to seize initial objectives and protect the LZs until follow-on echelons arrive in the objective area.

(2) Lift Capability. Helicopter lift capability is the single most important variable in determining how much combat power can be introduced into the objective area.

(3) Aircrew Endurance. Aircrew endurance must be considered. For planning purposes, the helicopter transport unit commander usually considers eight hours of flight time for dual piloted aircraft to be a safe limit for aircrews. If those limits are exceeded during a single period, then degraded aircrew performance can be expected on the following days.

e. Time Available. The following items are critical to the operation.

(1) Preparation, Planning, and Rehearsals. The time available for preparation, planning, and rehearsals is crucial. Helicopterborne planning must be centralized and precise, and normally takes more time than that for other operations.

(2) Additional Planning Time Requirements. Normally, additional planning time must be allotted for night operations and those involving multiple PZs and/or multiple LZs.

(3) Thorough Briefings. The HUC must allow adequate time to ensure that all subordinates and support elements are thoroughly briefed. Briefing time can be significantly reduced with good SOPs and previous training.

3202. Commander's View of the Plan of Attack

From the ground commander's point of view, the plan of attack for a helicopterborne operation includes the scheme of maneuver, plan for supporting fires, loading plan, air movement plan, and the landing plan, which must be developed concurrently and be closely integrated.

a. Scheme of Maneuver. The scheme of maneuver is the tactical plan to be executed by a force in order to accomplish its assigned mission. It includes objectives, LZs and sites, the forms of maneuver to be employed, distribution of forces, and necessary control measures. The commander must take into account the time it will take the helicopterborne force to consolidate the LZ and march to its objective. This must be compared to the enemy's ability to reinforce the threatened area.

b. Plan for Supporting Fires. The plan for supporting fires is the commander's employment of all supporting arms to assist in the accomplishment of the mission. The plan for supporting fires must support the scheme of maneuver and should provide for suppression of enemy air defenses during helicopter approach and retirement, preparation of the LZ, fires in support of the consolidation of the LZ, and fires in support of the ground operation. The plan for supporting fires should also include plans for employment of air defense weapons.

c. Loading Plan. The loading plan is designed to establish, organize, and control activities in the PZ, plan for the movement of troops and equipment to the PZ, and establish the priority of loading units. For battalions or larger, a written plan may be required. However, the requirement for written loading instructions can be minimized by advanced planning and be detailed unit SOPs. Regardless of its simplicity, the loading plan must receive command attention during planning. The ultimate success of the operation is directly related to a properly developed loading plan and subsequent control of unit loading.

d. Air Movement Plan. The air movement plan provides for the control and protection of the helicopterborne force during the air movement phase. The air movement plan is primarily the responsibility of the flight commander, although the ground commander must contribute. The air movement plan includes the selection of approach and retirement lanes, control points, suppression of enemy air defenses en route, and provisions for escort by attack helicopter or other aviation.

e. Landing Plan. The landing plan consists of the commander's guidance concerning the desired time, place, and sequence of arrival of units. The landing plan must support the ground tactical plan.

Section III. Detailed Planning

3301. General

The ground combat commander may be the GCE commander or he may be the HUC receiving a mission from his higher commander. The principles will remain the same given a formal MAGTF designation or not. In the absence of a formal MAGTF designation, ground, air, and other support elements perform the planning principles of a MAGTF formal command. These elements still assemble, plan, coordinate, and execute as a task-organized, air-ground team. The procedures for detailed planning are as follows:

a. The HUC receives a mission from his commander.

b. The HUC passes this mission information on to his staff. He may do this in the form of a warning order to allow his staff and subordinates to begin general planning.

c. At the same time that the HUC has received his mission and initial planning guidance, the helicopter unit commander will also receive a mission from his higher headquarters. The helicopter unit commander will assign a mission commander (MC) to coordinate with the HUC. In some cases, the helicopter unit commander may assume the role of the MC depending on the tempo and magnitude of operations.

d. It is the MC's responsibility to make initial liaison with the HUC. During his initial liaison, the MC will give the HUC and his staff planning data relative to the numbers and types of helicopters available for the lift.

3302. Five Basic Plans for Helicopterborne Operations

The five basic plans that comprise the reverse planning sequence are developed for each helicopterborne operation. They are—

- Ground tactical plan.
- Landing plan.
- Air movement plan.
- Loading plan.
- Staging plan.

These plans should not be developed independently. They are coordinated and developed concurrently by the staff of the designated helicopterborne force. The first step in the planning process is a close examination of the helicopterborne force's mission as it relates to the ground tactical plan.

3303. Ground Tactical Plan

The foundation for a successful helicopterborne operation is the ground commander's ground tactical plan. The ground tactical plan is normally developed first and is the basis from which the other plans are derived. The ground tactical plan is a portion of the helicopterborne scheme of maneuver. All planning evolves around this plan. The ground tactical plan specifies actions in the objective area which ultimately accomplish the mission. The plan also includes subsequent operations.

The ground tactical plan for helicopterborne operations contains essentially the same elements as any other infantry attack except that it is prepared to capitalize on speed and mobility in order to achieve surprise. Infantry elements are placed on or near the objective and organized to enable immediate seizure of objectives and rapid consolidation for subsequent operations. In some situations, helicopterborne combat power cannot be introduced quickly into the objective area and infantry must land away from the objective and build up combat power. Of course, the helicopterborne force must then move like any other infantry unit and much of the effectiveness desired from the helicopter's mobility is diminished. However, much of the infantry's endurance can be preserved even when forces must be landed away from the objective. The scheme of maneuver may

assume a variety of possibilities depending on the commander's evaluation of METT-T. Of particular importance is the availability of LZs in the area.

a. Mission. The most obvious portion of the helicopterborne mission is the requirement to conduct a helicopter movement. The following concerns should be examined:

- Missions of all task force elements and methods for employment.
- Purpose of the helicopter movement.
- Reason for using helicopters.
- Number of Marines to be lifted.
- Total weight to be lifted.
- Internal and external loading.
- Approximate distance of the air movement.

b. Concept of Operations. The ground concept is formulated in five parts:

- Ground movement to the PZ.
- Securing and organizing the PZ.
- Actions at and securing of the LZ.
- Ground movement from the LZ to the objective or actions on the objective if the force is landed directly on the objective.
- Operations subsequent to securing the objective.

c. Task Organization. Ground combat, ground CS, and helicopter/aviation units are task-organized for a specific mission. The task organization is completed so that the units being moved retain their ability to engage in ground combat during movement. If subsequent helicopterborne operations are planned or become a result of the initial mission, the ground commander must be permitted to adjust his task organization as necessary prior to subsequent landings. Multiple objectives and landings require detailed, flexible plans. The ground commander must have the opportunity to adjust his organization and conduct briefs prior to being landed in subsequent zones.

3304. Landing Plan

The landing plan must support the ground tactical plan. The plan sequences elements into the area of operations so that units arrive at locations and times prepared to execute the ground tactical plan. Considerations in developing the landing plan include:

- The availability, location, size, and enemy proximity to potential LZs are overriding factors.
- The helicopterborne force is most vulnerable during landing.
- Elements must land with tactical integrity.
- Troops are easily disoriented if the briefed landing direction changes and they are not kept informed.
- Initially, there may be no other friendly units in the area. The helicopterborne force must land prepared to fight in any direction.
- The landing plan should offer flexibility so that a variety of options are available in developing a scheme of maneuver.
- Supporting fires (artillery, naval gunfire, CAS, attack helicopters) must be planned in and around each LZ.
- Although the objective may be beyond the range of supporting artillery fire, artillery or mortars may be brought into the LZ early to provide fire support for subsequent lifts on the objective.
- The plan should include provisions for emergency extract, resupply, and medical evacuation by air.

a. Selection of Landing Zones. During MAGTF operations, selection of LZs is made by the MAGTF commander, based on the recommendations of the helicopter unit commander and

the HUC. In all other helicopterborne operations, the ground combat commander selects LZs based on the advice and recommendations of the supporting helicopter unit commander. LZs are selected using the following criteria:

- The ground commander's concept of operations.
- Location. LZs can be located on, near, or away from the objective, depending on the factors of METT-T.
- Capacity. The size determines how much combat power can be landed at one time. This also determines the need for additional LZs or separation between waves.
- Alternates. An alternate LZ should be planned for each primary LZ selected to ensure flexibility.
- Enemy disposition and capability. Enemy troop concentrations, air defenses, and their capability to react to a helicopterborne landing nearby are considered when selecting LZs.
- Cover and concealment. LZs are selected which deny enemy observation and acquisition of friendly ground and air elements while they are en route to and/or from (and in) the LZ.
- Obstacles. If possible the helicopterborne force should land on the enemy side of obstacles when attacking and use obstacles to protect LZs from the enemy at other times. LZs must be free of obstacles.
- Identification from the air. LZs should be readily identifiable from the air. If friendly reconnaissance units are available, LZs should be marked with chemical lights, preferably the infrared type, if the assault force is utilizing NVG or the guide angle indicator light (GAIL) system.
- Requirements for logistic support.
- Requirements for fire support.
- Available lanes to and from LZs and any restrictive effects on the employment of supporting arms.
- Weather. Reduced visibility or strong winds may preclude or limit the use of marginal LZs.

b. Landing Zone Characteristics. In addition to deciding where to land in relation to the objective, a decision is made on whether to use single or multiple LZs.

(1) The advantages of a single LZ are as follows:

- Allows concentration of combat power in one location (if the LZ is large enough).
- Facilitates control of the operation.
- Concentrates supporting arms in and around the LZ. Firepower is diffused if more than one LZ preparation is required.
- Provides better security for subsequent lifts.
- Requires fewer attack helicopters for security.
- Reduces the number of flight routes in the objective area, making it more difficult for enemy intelligence sources to detect the helicopterborne operation.
- Centralizes any required resupply operations.
- Concentrates efforts of limited LZ control personnel and engineers on one LZ.
- Requires less planning and rehearsal time.

(2) The advantages of multiple LZs are as follows:

- Avoids grouping assets in one location and creates a lucrative target for enemy mortars, artillery, and CAS.
- Allows rapid dispersal of ground elements to accomplish tasks in separate areas.
- Reduces the enemy's ability to detect and react to the initial lift.
- Forces the enemy to fight in more than one direction.
- Reduces the possibility of troop congestion in one LZ.
- Eliminates aircraft congestion on one LZ.

- Makes it difficult for the enemy to determine the size of the helicopterborne force and the exact location of supporting weapons.

c. Landing Formations. Aircraft formations on the LZ should facilitate offloading and deployment for the operation. The number and type of aircraft and the configuration and size of the LZ, may dictate the formation. Because contact is expected in the LZ, elements are landed ready to employ fire and movement. An LZ formation should not be a picture-perfect formation with standard distances between aircraft. To reduce troop exposure, aircraft must land rapidly in a safe area as close to concealment as possible. If possible, the PZ formation is the same. This provides troops a preview of the LZ and gives them an idea of where they will be located (upon landing) in relation to other elements.

d. Fires to Support the Landing. Frequently, it is desirable to make the initial assault without preparatory fires in order to achieve tactical surprise. However, preparatory fires are planned for each LZ so that they can be fired if needed. Planned fires for helicopterborne operations should be intense and short, but with a high volume of fire to maximize surprise and shock effect. The fires should end just before the first assault element's landing. When developing fire support plans, consideration is given to the following:

(1) Deception. False preparations are fired into areas other than the objective or LZ.

(2) Loss of Surprise. A preparation of long duration may reduce the possibility of surprise.

(3) Allocation of Fire Support. The allocation of fire support establishes what assets commanders have. Higher echelons allocate supporting arms to lower echelons. Commanders at lower echelons may then further allocate fire support (e.g., priority of fires). Based on the allocation of fire support and the commander's guidance, the FSC conducts fire support planning to support the landing.

(4) Significant Targets. A known or suspected enemy force regardless of size, warrants target planning.

(5) Obstacles to Landing and Maneuver. Some ordnance used in preparation (artillery, bombs, napalm) can cause craters, tree blowdown, fires, and LZ obscuration and therefore may not be desirable.

(6) Scheduled Fires. Fires are scheduled to be lifted or shifted to coincide with the arrival times of aircraft formations.

(7) Positive Control Measures. Control measures must be established for lifting or shifting fires. Airspace coordination areas (ACAs) may be necessary to protect approach and retirement lanes.

3305. Air Movement Plan

The air movement plan is based on the ground tactical plan and the landing plan. The air movement plan specifies the air movement schedule and provides instructions for the air movement of troops, equipment, and supplies from PZs to LZs. It also provides coordinating instructions pertaining to approach and retirement routes, air control points, aircraft speeds, altitudes, and formations. The planned use of attack helicopters, to include security and linkup locations, should be included in this plan. During MAGTF operations, the air movement plan is approved by the MAGTF commander and his staff based on the recommendations of the helicopter unit commander, the HUC, and the CSS unit commander. In all other helicopterborne operations, the helicopter unit commander or his MC develops the air movement plan based on the advice and recommendations of the HUC. The information essential to the ground combat commander is obtained and disseminated by the ground unit air officer (AO).

a. Selection of Helicopter Approach and Retirement Routes. Helicopter approach and retirement lanes are air corridors in which helicopters fly to and from their destination during helicopter operations. During MAGTF operations, helicopter approach and retirement routes are selected by the MAGTF commander based on the recommendations of the helicopter unit commander and the HUC. In all other operations, approach and retirement routes are selected by the helicopter unit commander or his MC based on the advice and recommendations of the HUC. Examination of METT-T with strong emphasis on threat analysis determines approach and retirement route selection. Route and altitude are interdependent in the selection and shall be considered concurrently to determine the optimum movement. Avoidance of enemy detection and fires is the primary consideration. In addition to METT-T factors, route selection planning shall consider the following general principles.

(1) Has the terrain been used to the best tactical advantage?

(2) Have the primary and alternate approach and retirement routes been identified?

(3) Have routes been selected which are easy to identify and navigate?

(4) Will communications capability be impaired?

(5) Can the routes be used under adverse weather conditions?

(6) Do unique support requirements exist for the routes selected?

(7) Have supporting arms capabilities and limitations been considered?

b. Ground Considerations During Helicopter Movement. It is important for ground commanders to know the dimensions of approach and retirement routes for fire support planning. Leaders must be familiar with where routes begin and end. Because helicopters may be forced to land along the route, leaders should be able to identify prominent terrain features and check points during flight. Having this information increases the opportunity for ground forces to contribute to mission accomplishment should they be forced to land along the route. Ground leaders should be conducting visual reconnaissance to the maximum extent possible during flight. Leaders should inform Marines as helicopters pass over check points so they can prepare to disembark prior to landing.

c. Supporting Fires Along the Approach and Retirement Route.

(1) Fires along the flight route are planned to suppress known or suspected enemy positions. These fires should be of short duration. Multiple target engagement techniques should be utilized (groups, series).

(2) Fire plans cover the PZs, flight routes, and LZs. Fire support plans include suppression of enemy air defense systems and smoke to protect formations from enemy detection. This requires aggressive fire planning by the FSC and direct coordination with supporting units.

(3) All available fire support is used to suppress and/or destroy enemy weapons.

(4) Support may consist of smoke or other countermeasures for suppressing or confusing enemy air defense systems.

(5) On-call fires are planned along the flight route to ensure rapid adjustment of targets of opportunity.

(6) During night operations, the use of illumination fire requires detailed planning. Illumination can interfere with NVG and cause unsafe conditions.

3306. Loading Plan

a. Mobility. An infantry or other type unit which retains its ability to accomplish its primary mission while moving by helicopter possesses helicopter mobility. Correct helicopter loading is essential in maintaining mobility. Mobility is accomplished only to the extent that the ground unit retains its ability to accomplish its primary mission while moving. If, prior to beginning the ground mission, the helicopterborne unit must reorganize or adjust upon landing, mobility is lost or diminished. The only way to maintain the degree of mobility desired during helicopterborne operations is to load and land helicopters in the manner and sequence which allows immediate assumption of the mission upon landing.

b. Load Distribution. The loading plan is based on the air movement plan. It ensures that Marines, equipment, and supplies are loaded on the correct aircraft. Helicopter loads are also placed in priority to establish a bump plan. A bump plan ensures that essential Marines and equipment are loaded ahead of less critical loads in case of aircraft breakdown or other problems. In any case, planning must cover the organization and operation of the PZ including load positions, day and night markings, and communications. The loading plan is more critical when mixing internal and external loads and/or when mixing helicopter types.

c. Written Plans. The requirement for detailed, written plans can be reduced by having adequate unit SOPs covering PZ operations and loading plans. A well planned and properly executed loading operation is imperative to mission success.

d. Primary and Alternate PZs. Identification of primary and alternate pickup zones is the first step in developing the loading plan. Considerations in PZ identification include selecting suitable areas which accommodate helicopter landing and lift, are securable with ground forces, and facilitate staging of aircraft loads. Although enemy contact or influence is not desired during pickup, pickup under pressure must be considered and planned. Ideal PZs also facilitate delivery of suppressive fires, security for ground troops, and security for landed and lifting helicopters.

e. PZ Criteria. Once PZs are identified, the ground commander selects and assigns PZs to be used by subordinate units. PZ criteria includes—

(1) Number. Multiple PZs avoid concentrating forces in one area.

(2) Size. Each PZ should accommodate all supporting aircraft at once, if possible.

(3) Proximity to Troops. Where possible, the selected PZs should not require extensive ground movement (to the PZ) by troops.

(4) Accessibility. If possible, PZs should be accessible to vehicles to move support assets and infantry.

(5) Vulnerability to Attack. Selected PZs should be masked by terrain from enemy observation to the maximum extent possible.

(6) Preparation. It is usually better to select PZs that are usable as they are, than to select PZs that require clearing. Of course, this is contingent upon the enemy situation.

f. Other Considerations for PZ Selection. The remaining considerations in PZ selection and organization are similar to those in selecting, organizing and running other LZs.

g. PZ Control. PZs are task-organized to meet the requirements of a specific mission. Depending on the size and magnitude of the operation, a PZ may be as small as one point in one site or as large as numerous points in numerous sites. Multiple site PZ may require select sites to conduct strictly internal or external loading functions.

When employing a PZ with numerous sites, a designated specialization for each site may facilitate operations. For example, a battalion-sized helicopterborne assault could require a four-site zone. One site may conduct primarily cargo external lift functions, another site primarily external vehicular lifts, another internal cargo loading, and another tactical loading of troops. This enables equipment and personnel to be concentrated where most needed.

(1) Pickup Zone Control Officer. The PZCO organizes, controls, and coordinates operations in PZs. He is designated by and responsible to the commanding officer of the moving unit. In battalion level operations, the PZCO could be the battalion executive officer. He and his control group and/or HST personnel are trained in HST operations and PZ control by the AO. In most situations, the AO will not be available to function as the PZCO. He will usually be in the COC assisting the FSC in the allocation of air power. Marines from the Service Platoon in Headquarters and Service Company form the PZ control group and/or HST. These Marines are trained by the battalion AO. All personnel allocated to PZ control must be completely trained in HST functions to include external lifting and terminal control. The AO should use HST Marines from landing support battalion to augment his training program. The PZCO accomplishes the following:

(a) Forms the Control Group. To conduct operations, the PZCO forms a control group to assist him. It may include terminal control, guides to lead elements from unit positions around the zone to the staging area, Marines to conduct hookup operations for external lifts, Marines to clear PZs and provide local security or any other necessary Marines required to perform required tasks within the zone. For battalion helicopterborne operations, each company commander may need to appoint a PZCO to operate a company PZ for the battalion.

(b) Establishes Communications. The PZCO should communicate on two primary radio frequencies: one to control movement and loading of units, and one to control aviation elements. Alternate frequencies are provided as necessary.

(c) Plans and Initiates Fire Support. He plans fires near PZs to provide all-round protection (from available support) without endangering arrival and departure of troops or aircraft.

(d) Plans and Initiates Security. The PZCO ensures that adequate security is provided. Security protects the main body as it assembles, moves to the PZ, and is lifted out. Security elements should be provided by other forces, if available, when the PZ is within the friendly area. Security comes from the helicopterborne force's resources if it is to be extracted from the objective area.

(e) Clears PZ of Obstacles

(f) Marks the PZ

(2) PZ Identification and Marking

(a) The PZCO directs the marking of PZs, sites, and points.

(b) PZs are designated by a code name. A zone with more than one site can usually be identified in the air by prominent terrain features. The zone can also be marked by several methods varying from use of colored smoke, air panels, etc. Red is never used to mark an aircraft landing position. It is used to mark landing obstacles such as trees or stumps in the landing area.

(c) Landing sites are designated by a color.

(d) Landing points are designated by two digit numbers.

(e) Regardless of the type of markers, the PZ is marked to indicate where aircraft are to land and coincide with the selected PZ aircraft formation.

(f) An effective method is to have several individuals in each unit paint (and carry) an extra camouflage cover or a modified (cut to size) air panel. The colored covers, when displayed, indicate where the lead aircraft lands.

(3) Movement to the PZ

(a) Ground and air unit movement to the PZ is scheduled so that only the troops to load and the helicopter to be loaded arrive at the PZ at the same time. This prevents congestion, preserves security, and reduces vulnerability to enemy actions on the PZ.

(b) To coordinate the movement of units to the PZ, the PZCO—

- Selects troop assembly areas, holding areas, and routes of movement. A holding area is located close to the PZ. It is used only when the assembly area is some distance away and does not allow timely movement to the PZ.
- Determines movement time of ground units to PZs.
- Specifies arrival time(s) and sees that movement of units remains on schedule.

(4) Airloading Table

(a) At company and lower levels, the airloading table assigns each Marine and major items of equipment or supplies to a specific aircraft. The airloading table is a simple accountability tool which provides a loading manifest for each aircraft. No specific format is required, although a standard heliteam wave and serial assignment table can be used if that degree of detail is necessary.

(b) When time is limited, the table can be put on a sheet of paper from a squad leader's notebook. It merely lists Marines (by name) and equipment to be loaded on each aircraft. These lists are left with a specified representative in the area. This procedure ensures that if an aircraft is lost, a list of personnel and equipment on board is available. If recurring small unit helicopterborne operations are anticipated, small unit leaders may require their Marines to carry individual preprinted three by five cards for quick collection upon loading. This enables leaders to print aircraft numbers on a stack of cards as collected to save time.

(5) Load Planning

(a) During preparation of the loading tables, unit leaders at all levels attempt to maintain the following:

- Tactical integrity of units. When planning loads for helicopterborne operations, fire teams and squads are loaded intact on the same aircraft and platoons in the same wave. This insures integrity as a fighting unit upon landing. The commanders goal is to load his unit so that unit integrity is maintained at every level.
- Composite first wave. The composite first wave is an exception to maintaining tactical integrity of units. The composite first wave facilitates the seizure of the objective LZ and the landing of subsequent waves into the LZ area. Establishing a composite first wave enables the commander to task organize the initial landing with varying elements from subordinate units of the tactical force. This option may facilitate securing the objective LZ by eliminating the need to move troops on the ground as subsequent waves land. An illustration of a composite first wave is provided in figure 3-1.

The diagram depicts a company landing. A platoon is task organized with one reinforced squad from each rifle platoon. Each squad flies into the objective LZ in the first wave. Upon landing, the squads disembark and move to locations where their platoons will establish positions. Subsequent waves

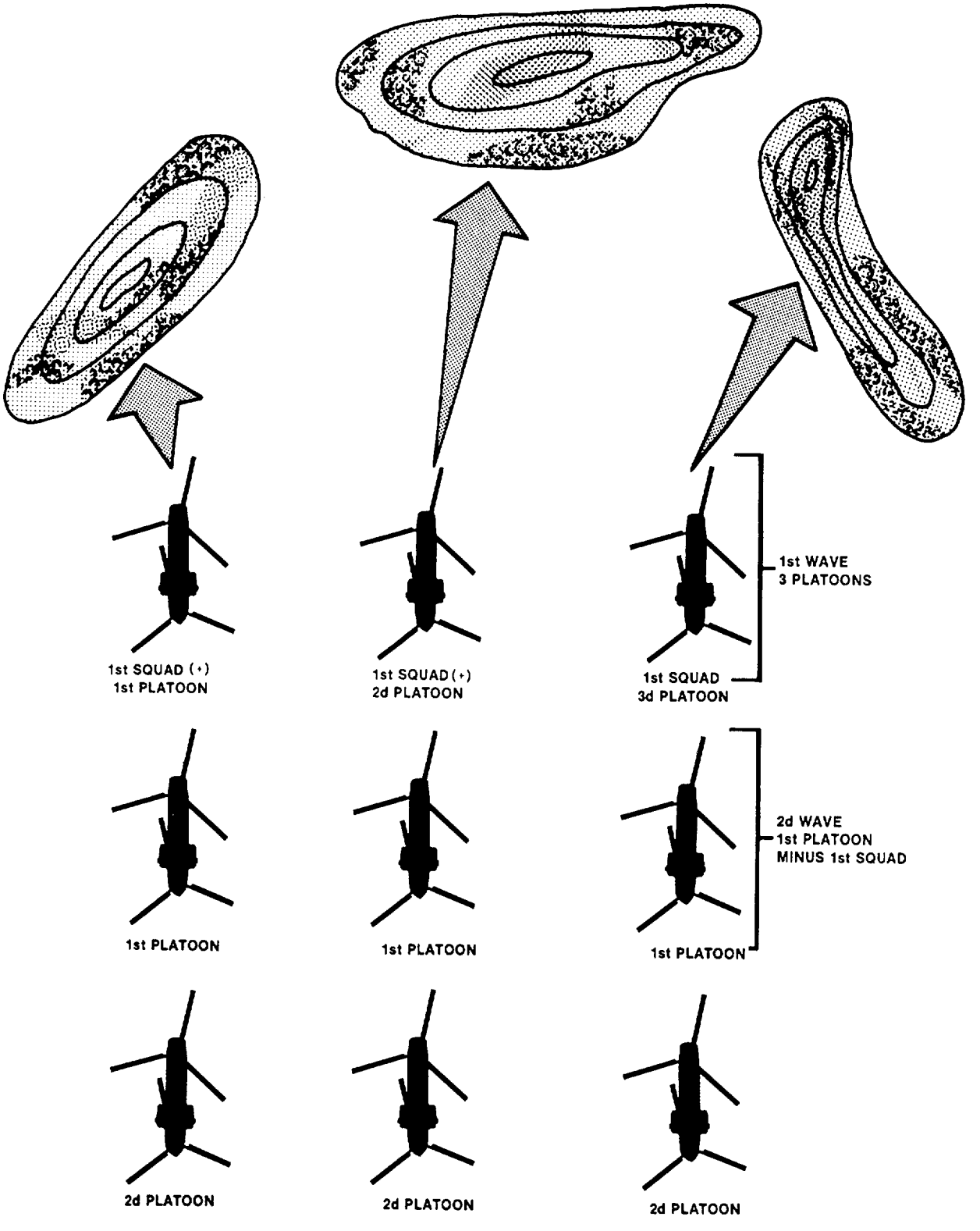

Figure 3-1. Company Landing.

consist of the remainder of the three rifle platoons. The rifle platoons fly into the LZ in flights which are organized as normal. If the objective LZ were secured by one integral platoon, troops would be required to move from their initial positions to their ultimate platoon positions as follow-on waves arrived in the objective LZ. In some tactical situations, this may be the preferred method. However, this method creates confusion at the objective and causes additional exposure from movement.

- Self-sufficiency of loads. Each unit load should be functional by itself (whenever possible).
- Every towed item is accompanied by its prime mover.
- Crews are loaded with their vehicle or weapon.
- Component parts with major items of equipment.
- Ammunition is carried with the weapon.
- Sufficient personnel are on board to unload cargo.
- Communication between flights, if possible without radios.
- Tactical cross-loading. Loads should be planned so that all leaders, or all crew-served weapons, are not loaded on the same aircraft. Thus, if an aircraft is lost, the mission is not seriously hampered. For example, loading the platoon commander, platoon sergeant, and all squad leaders on the same helicopter, or loading more than one machine gun team on the same aircraft, are violations of cross-loading principles.

(b) Another consideration is to determine whether internal or external loading is the best delivery method for equipment and supplies. Helicopters loaded internally can fly faster and are more maneuverable. Externally (sling) loaded helicopters fly slower and are less maneuverable; however, they can be loaded and unloaded more rapidly than internally loaded helicopters. The method used depends largely on availability of sling and rigging equipment.

NOTE: Supplies loaded externally (although loaded rapidly) can present problems if the supplies are destined for more than one location or unit.

(6) Aircraft Bump Plan

(a) Each aircraft load has a bump sequence designated on its airloading table. Bump priority ensures that the most essential personnel and equipment arrive at the objective area first. It specifies personnel and equipment that may be bumped and delivered later.

(b) If all personnel within the load cannot be lifted, individuals must know who is to offload and in what sequence. This ensures that key personnel are not bumped arbitrarily. Also, bump sequence is designated for aircraft within each serial or flight.

(c) This also ensures that key aircraft loads are not left in the PZ. When an aircraft within a serial or flight cannot lift off, and key personnel are on board, they offload and reboard another aircraft that has priority.

(d) A PZ bump-and-straggler collection point is specified by company or larger units. Personnel not moved as planned report to this location, are accounted for, regrouped, and rescheduled by the PZCO for later delivery to appropriate LZs.

(e) A flight is one or more aircraft proceeding on a common mission.

(f) A load (stick) is personnel and/or equipment designated to be moved by a single aircraft.

(g) The sequence of departure from PZs is based on the mission to be accomplished by

each subordinate unit upon landing. Unit priorities are based on the sequence of arrival at their LZs. For example, if Company A is to land first (at H-hour), and Company B second (at H+15), and Company B is 15 minutes farther (in flight time) from the objective LZ, it may depart the PZ before Company A.

3307. Staging Plan

The staging plan is based on the loading plan and prescribes the arrival time of ground units (troops, equipment, and supplies) at the PZ in the proper order for movement. Loads must be ready before aircraft arrive at the PZ; usually, ground units are expected to be in the PZ posture 15 minutes before aircraft arrival. The staging plan also restates the PZ organization, defines flight routes to the PZ and provides instructions for linkup of all aviation elements. Air-to-air linkup of aviation units should be avoided, especially at night when NVG are being used.

Section IV. Mission Briefing and Debriefing

3401. General

The responsibility for operational briefings is a function of command and rests with the commander tasked with executing helicopterborne operations. Generally, each subordinate level of command conducts a briefing which focuses on that unit's participation in the operation. For example: a command representative of the LF/MAGTF briefs the overall operation, representatives from the helicopter and helicopterborne units brief their unit's participation, the MC briefs the airborne conduct of the helicopterborne assault, each individual flight leader briefs his flight, and each individual helicopter aircraft commander/pilot qualified in model (HAC/PQM) briefs his aircrew.

3402. Mission Brief

The mission brief is the final phase of the planning effort and should include, as attendees, all key personnel. This brief will set forth the concept of operations, scheme of maneuver, and specific details concerning mission coordination and execution. Information shall be provided which enables each participant to understand the overall operation and his specific role and responsibilities regarding mission execution. Joint briefings with representatives from each participating unit should be used as much as possible. At a minimum, attendees should include, as appropriate for the assigned mission, the HC(A); HUC; FSC or his representative; TAC(A) or FAC(A); FAC; fixed-wing attack aircraft flight leader; attack helicopter flight leader/flight coordinator; HTC; and the HACs/PQMs.

The information developed during the planning effort shall comprise the subject matter for the mission brief. See appendix for example of mission briefing guide. Mission briefers shall use the guides in this chapter, appendix ____, and section III, part 2 of the applicable naval air training and operating procedures standardization program (NATOPS) flight manuals to satisfy mission briefing requirements.

3403. Helicopterborne Mission Briefing Guide

Proper briefing of flight crews is essential to mission success. The mission briefing should be conducted in the most logical, brief, and organized manner possible. Some methods in the briefing follow:

a. Have all participants in place and begin the brief on time.

b. Seat flight crews together by section, division, flight, etc., to prevent confusion and save time.

c. Provide preprinted sheets/cards containing nonperishable administrative information to improve accuracy and flight crew concentration. Some of the information which might be presented in this manner include—

- Helicopter assignment.
- Call signs.
- Flight leader/alternate flight leader.
- Times (manning, engine start, rotor engagement, taxi, takeoff, etc.).
- Controlling agencies.
- Frequencies.
- Radio procedures.
- Identification friend or foe (IFF) procedures/codes.
- Navigation aids (NAVAIDs).
- Weather forecast.
- Minimum operational weather.

It must be emphasized that the mission briefing guide is only that, a guide, and is not intended to

be utilized in total, or depicted sequence, for every type of helicopter mission. Only those items directly applicable to a specific mission should be incorporated into the mission brief. Since all members of the mission will not be involved in the planning, it is imperative that the flight brief be well delivered, organized and easily understood. The use of this mission briefing guide and adequate rehearsal will greatly aid the delivery of a professional flight brief. Additionally, use of tactical SOPs will significantly reduce the time required. Listed below are some of the most common problems associated with mission briefings.

- Redundancy within the briefs.
- HC(A) overtasked.
- Communication plan has different frequencies than those in use.
- HC(A)'s position in flight not briefed.
- Inadequate or improper use of flight coordinator.
- LZ briefs not thorough enough.
- Scatter plan inadequate.
- Attack helicopter positions during flight sequence not (ingress or egress).
- Kneeboard handouts—too many or not enough.
- Goggle and degoggle procedures not briefed.
- Time hacks do not include all players.

Chapter 4

Combat Operations

Helicopterborne operations are deliberate, precisely planned, and vigorously executed combat operations. Helicopterborne operations are designed to allow friendly forces to strike over extended distances and terrain barriers to attack the enemy when and where he is most vulnerable. It is the MAGTF commander's option to employ a helicopterborne operation to enhance a ground operation. The decision to conduct a helicopterborne operation is dependent on many factors relative to METT-T. The commander uses the HTF when the situation permits and when the possible payoff outweighs the risk. A helicopterborne capability promotes speed, surprise, and flexibility so that the commander can react rapidly to a changing situation. The goal of this chapter is to present to the commander the best use of helicopterborne operations in offensive, defensive, and retrograde operations.

Helicopterborne operations can be conducted alone or in conjunction with other operations. A helicopterborne operation is based on the ground tactical plan and capitalizes on speed and flexibility in order to gain maximum surprise. The ultimate goal is to place the assault echelon on or near the objective capable of immediate action.

Typically, helicopterborne operations are conducted to—

- Seize key terrain.
- Overcome obstacles.
- Conduct raids.
- Insert or extract patrols.
- Conduct security operations.
- Support deception operations.
- Block enemy penetrations or withdrawals.
- Reinforce encircled forces.
- Reposition forces.
- Rapidly reinforce a successful attack.

Section I. Helicopterborne Operations in Offensive Operations

4101. General

The helicopterborne attack is the basic type of offensive operation conducted by an HTF. It is the integration of combat, CS, and CSSEs into or out of an objective area. Generally, the term *insertion* applies when discussing the movement of an assault into the objective area and the term *extraction* applies when discussing the movement from the objective area. While these terms are fundamental to all helicopterborne operations, they take on added importance in the attack.

4102. Attack

The opportunity to attack may arise during the course of battle, or it may be created by skillful, tactical leadership. Whatever the source, the attack is

fast, violent, resolute, shrewd, and coordinated. The HTF may conduct an attack in conjunction with other forces. The type of action conducted by the larger force usually dictates the type of attack employed by the helicopterborne force.

There are two general types of attack that a helicopterborne operation may be involved in: hasty and deliberate. The hasty attack is one in which preparation time is traded for speed in order to exploit an opportunity. A deliberate attack is characterized by preplanned, coordinated employment of firepower and maneuver. The major difference between a hasty and deliberate attack is time and enemy information available.

a. Hasty Attack. Situations in which an HTF might be called on to execute a hasty attack in support of a larger force are as follows:

- During movement to contact by the larger force when unexpected contact is made. The helicopterborne force is committed to exploit a tactical advantage or to further develop the tactical situation.
- When part of the larger force's deliberate attack plan is modified while the operation is under way. The helicopterborne force is committed to reinforce in a weakened area or to exploit a tactical advantage.
- At the conclusion of an attack when a further advance is ordered. The helicopterborne force is committed to exploit the attack's success and to maintain momentum.
- An attack from a defense in which the commander sees an opportunity for offensive action and seizes the initiative.

b. Actions to Be Taken Before, During, and After a Hasty Attack. Because the hasty attack is conducted on short notice, there is little time to plan and orders must be brief. The HTF must then rely on previous training and SOPs to cover these situations.

When a hasty attack is considered under any of the circumstances as listed in paragraph 4102a., it is important to identify tentative PZs, LZs, and approach and retirement lanes throughout the higher unit's zone of action. Continuously identifying these areas permits rapid commitment of the HTF anywhere in the sector.

When the HTF is committed, the commander initiates several actions simultaneously. The commander directs suppressive fires to neutralize the enemy's ability to counter the helicopterborne operation and concentrates sufficient combat power to overwhelm the enemy at selected points. While the helicopterborne force is en route, supporting fires suppress or destroy known or suspected enemy positions. Priority of fires go to the SEAD.

As the attack starts, attack helicopters overwatch and react as necessary while the FSC and AO direct artillery, mortars, CAS, and other supporting fires. Artillery and mortars destroy, neutralize, or suppress enemy indirect fire weapons as soon as they are located. Smoke may be used to screen aircraft movement from observation. However, the commander is careful that smoke does not obscure the LZ and hinder the landing operation. Airspace coordination must be effected early.

c. Deliberate Attack. The HTF, as part of a larger force operation, may conduct a deliberate attack. The helicopterborne force is provided sufficient time to develop a detailed, coordinated plan; receive additional assets; change task organization as necessary; and gather detailed intelligence. Detailed information about the terrain is collected so that the best PZs, LZs, and flight routes can be selected. Helicopterborne objectives are normally in the enemy's rear area, or the attack is from the flank or rear. This will normally preclude or limit the opportunity for leaders to see the terrain and force planners to rely on maps and aerial photographs.

(1) Selection of Soft Objectives. When the larger force concentrates its combat power on a narrow front to break through the enemy defense, the helicopterborne force may bypass main defenses to destroy artillery positions, CPs, logistics and communications facilities, and/or to secure key terrain in the enemy's rear.

(2) **Avoid Strong Defenses.** An attack against a heavier or well-prepared enemy force, particularly on the mechanized and/or armor battlefield, may subject the helicopterborne force to devastating firepower. For this reason, the helicopterborne force may land away from the objective and conduct an infantry attack in conjunction with friendly mechanized and/or armor forces. The helicopterborne force must also consider that a highly mobile enemy force could encircle the force before it moves from an LZ. Consequently, the commander selects LZs in armor-restrictive terrain and employs antitank weapons and attack helicopters against likely armor approaches. With accurate intelligence, these actions provide time to organize after landing and to attack the objectives.

4103. Exploitation

Exploitation is another operation where the helicopterborne operations can be used for a low risk, high payoff operation. Exploitation is an operation undertaken to follow up success in the attack. Attacks are conducted with two overriding requirements: speed and violence. The attackers bypass pockets of resistance to concentrate on the destruction of the more vulnerable headquarters, CS, and CSS units. They disrupt the enemy's C^2; his flow of fuel, ammunition, repair parts; and his air defenses and artillery. By disrupting the enemy's flow of support, this not only weakens and/or destroys the enemy but eliminates the battle of tomorrow. Enemy air defenses are avoided or suppressed so the HTF can exploit the situation.

4104. Pursuit

a. General. Pursuit is an offensive operation designed to catch or cut off a hostile force attempting to escape, with the aim of destroying it. Its purpose is to envelop the retreating force and destroy it by coordinated fire and maneuver. An HTF, operating as part of the pursuit force, can expect to be ordered to bypass resistance of any kind and move relentlessly to deep objectives that serve as chokepoints for the retreating enemy. The helicopter provides the task force with the high degree of mobility required to conduct pursuit operations.

b. Coordination of Pursuit. Fixed-wing aircraft, attack helicopters, and helicopterborne forces can repeatedly attack the flanks of the withdrawing enemy columns, slowing them and aiding in their destruction. Blocking positions can be established on withdrawal routes to trap enemy forces between the encircling force and the direct-pressure force. Artillery and FARPs should be lifted into the encircling force areas as soon as possible.

4105. Secure and Defend

a. Seizure and Retention. A helicopterborne assault operation in a seizure and retention operation is two-phased and requires detailed planning like a deliberate attack. The secure and defend mission is conducted when an objective, such as a vital terrain feature, must be seized and retained. The limited staying power of the helicopterborne force dictates early linkup with ground units, reinforcement by other units, or extraction from the enemy area.

(1) **First Phase.** The first phase is an attack to secure terrain to be controlled by the helicopterborne force in the initial stages of the assault. This should be a single-lift insertion of sufficient combat power to defeat enemy forces on the objective.

(2) **Second Phase.** The second phase of the operation is the defense of the objective LZ. This will normally involve a perimeter defense that controls all terrain essential to the defense of the LZ. This area should be large enough to provide operating space for combat, CS, and CSS units. It may require adequate PZs for simultaneous helicopterborne operations and space for landing artillery, follow-on forces, and supplies. The area must be small enough for

the helicopterborne unit to defend yet large enough to permit defense-in-depth and maneuver of reserves to counter enemy attacks. Size is dictated by mission, enemy strength, and disposition, terrain, and helicopterborne combat power.

b. Control Measures. Boundaries delineate responsibilities of the helicopterborne force's subordinate elements. A battalion area may be divided into company-sized zones and objectives. Each company clears, secures, and defends an assigned area. The size sector assigned each company should be within its capability to seize and defend in widely divergent directions. A company facing a dangerous avenue of approach, for example, is assigned a smaller sector than a company facing a less dangerous avenue. Defensive responsibility for an avenue of approach is not divided. The unit assigned the approach also covers any dominating terrain.

c. Assault Objectives. A terrain feature to be secured in an assault, that is vital to mission accomplishment, is designated as an assault objective. The assault objective should include terrain that dominates all high-speed approaches to the objective area. Assault objectives are assigned priorities. Those specified by higher headquarters are given first priority. Others are ranked according to the threat they would pose if controlled by the enemy. A company's sector should include at least one LZ for an assault landing and for resupply and evacuation.

4106. Reconnaissance in Force

a. General. Reconnaissance in force is an offensive operation designed to discover and/or test the enemy's strength or to obtain other information. It is conducted when the enemy situation is vague. This type of operation is conducted by forces strong enough to accept engagements with the enemy to accomplish their mission. The information obtained (for example, major weaknesses in enemy positions), if promptly exploited, may provide a significant tactical advantage. The reconnaissance in force is planned and conducted with elements specifically prepared to find the enemy and to develop the situation.

The reconnaissance in force also locates the enemy and presses him into reacting. When a weak point is discovered, the helicopterborne force exploits it quickly. The commander exercises caution, however, since the enemy response may be too strong for the helicopterborne force. Thus, the commander also plans a withdrawal to avoid destruction.

However, we must understand that a helicopterborne operation is not designed to land where the enemy is. Therefore, the helicopterborne operation, in many cases, will be a reconnaissance in force.

b. Helicopterborne Operations in a Reconnaissance in Force. The reconnaissance in force is an ideal mission for the helicopterborne force in an insurgent environment to keep constant pressure on a guerrilla force. Helicopterborne forces are also suited for reconnaissance-in-force operations against conventional light infantry. Helicopterborne forces are not suited for operations against strong armor threats due to the likelihood of ground contact with an enemy force that has superior firepower, mobility, and protection.

c. Determining Factors. The reconnaissance in force accepts risk to gain intelligence information rapidly and in more detail than other reconnaissance methods. The MAGTF commander assigning a helicopterborne force this mission must determine the following:

(1) Is the desired information important enough to justify the risks to personnel and possible loss to aircraft?

(2) Can other intelligence methods obtain the same information in sufficient time with less risk?

(3) Will a reconnaissance in force compromise future plans?

(4) Can the operation succeed?

d. Specific Objectives. When the commander wants information about a particular area, the reconnaissance in force is planned and executed as an attack against a specific objective(s). The objective is usually of such importance that when threatened, the enemy will react. For example: a successful reconnaissance in force may cause commitment of enemy reserves, redeployment of enemy fire support means, or adjustment of enemy second-echelon forces. Taking a terrain objective may not, in itself, be the purpose of the operation. Rather, the operation may seek to obtain specific information about the enemy by seizing a terrain objective. The objective location depends on the information desired and the degree of risk accepted. The HTF's combat power must be sufficient to force the enemy to react. This should reveal positions, strength, planned fires, and planned use of reserves. It may also disrupt the enemy's planned operations and take the initiative from him.

A helicopterborne battalion can deploy all its companies against specific objectives; or the commander may commit one or two companies and retain the remaining elements to respond to tactical situations as they develop. When the enemy reacts to one unit, the units not in contact are shifted to exploit revealed enemy weaknesses or help extract a unit under pressure.

4107. Raid

a. General. Helicopterborne forces are particularly suited for raids. However, detailed planning and the element of surprise are vital to the success of a helicopterborne raid.

b. Helicopterborne Raid. A helicopterborne raid is a swift penetration of hostile territory that may be conducted to destroy installations, confuse the enemy, or gather information. It ends with a planned withdrawal. Because a raid is conducted behind enemy lines, it requires exact planning to ensure a high probability of success. The selection of LZs, PZs, and flight routes (as in the deliberate attack) is based on the results of detailed planning and required intelligence. Since the raiding force attempts to achieve surprise, the decision to land on the objective takes on added significance.

(1) The HTF may land on or near the objective when the following applies:

- There is a suitable LZ.
- The enemy does not have a highly mobile reaction force nearby to attack the helicopterborne force as it is landing or immediately after it lands.
- The objective is not accessible by ground movement.
- The commander determines that ground movement would expose his forces to enemy fire and possibly disrupt the mission.
- Surprise is important.
- There are no armor or mechanized units and/or vehicles on the objective.
- There are no air defense weapons on the objective.
- The helicopterborne force can land overwhelming combat power quickly on the objective.

(2) The HTF should land some distance from the objective when these considerations apply:

- The force decides to assemble and reorganize before conducting the assault.
- The only suitable LZs are away from the objective.
- There is a highly mobile enemy force on the objective that could disrupt the landing.
- Surprise is not imperative.
- Local enemy air defense is too strong.

c. Conducting a Raid. The HTF organizes to accomplish four essential tasks – C^2, security, support, and assault.

(1) Command and Control. The commander commands and controls from a location that offers the best vantage points; however, during air movement, the commander normally uses a C^2 helicopter. After units are on the ground, he may join one of the ground units or he may continue to control from the air.

(2) Security. The element given the security mission blocks avenues of approach into the objective and provides suppressive fires for withdrawal after the mission is complete.

(3) Support. The element providing assault support lays down a heavy volume of suppressive fire to neutralize the objective and to destroy the enemy that is occupying it.

(4) Assault. The element conducting the assault secures the objective and provides security for specialty teams (for example, demolitions).

d. Rehearsal. Rehearsals are critical to success. The operation should be rehearsed several times by all elements participating in the raid. If it is a night raid, rehearsals are conducted during daylight and darkness.

e. Withdrawal

(1) A raid differs from other attacks in that it includes a withdrawal plan. The plan contains provisions for withdrawal by air as well as on foot (in case aircraft cannot extract the force). Withdrawal on foot may require the entire force to move as a unit, or the force may have to break down into small elements to evade enemy contact and exfiltrate the area.

(2) A withdrawal by air involves movement into, and defense of, the PZ. (See fig. 4-1.) If the withdrawal is for the purpose of committing the force to another combat mission, then an additional ground tactical plan is prepared for that phase of operation. Either plan is as detailed as time permits and includes –

- PZ designation.
- Fire support plan for movement to secure the PZ and to cover the withdrawal.
- Schedule of unit movement to the PZ.
- Loading priorities.

f. Unit Sequence. The sequence of unit withdrawal varies according to the tactical situation and subsequent mission of the force. Administrative, CSS personnel, and heavy equipment are withdrawn first (before tactical units). The commander may withdraw them to a secured (intermediate) area and then move them to another (combat) area after it is secured. Unit redeployment is determined by combat and security requirements in the new area.

g. Pickup Zone Designation

(1) Pickup Zones. PZs are designated by the headquarters controlling the withdrawal. PZs are as close to unit positions as the terrain and enemy situation permit. To achieve speed in landing, loading, and lift-off, multiple PZs may be used (consistent with available security forces).

(2) Pickup Zone Control Officer (PZCO). A PZCO is designated for each unit's PZ. He is responsible for calling units and guiding them from their assembly areas to the PZ to expedite loading. The senior PZCO coordinates all PZ operations when using multiple PZs (and PZCOs). He maintains contact with the MC or HC(A) to ensure coordinated arrival of troops and aircraft.

(3) Security

(a) Security elements are positioned to cover the main body as it assembles, moves

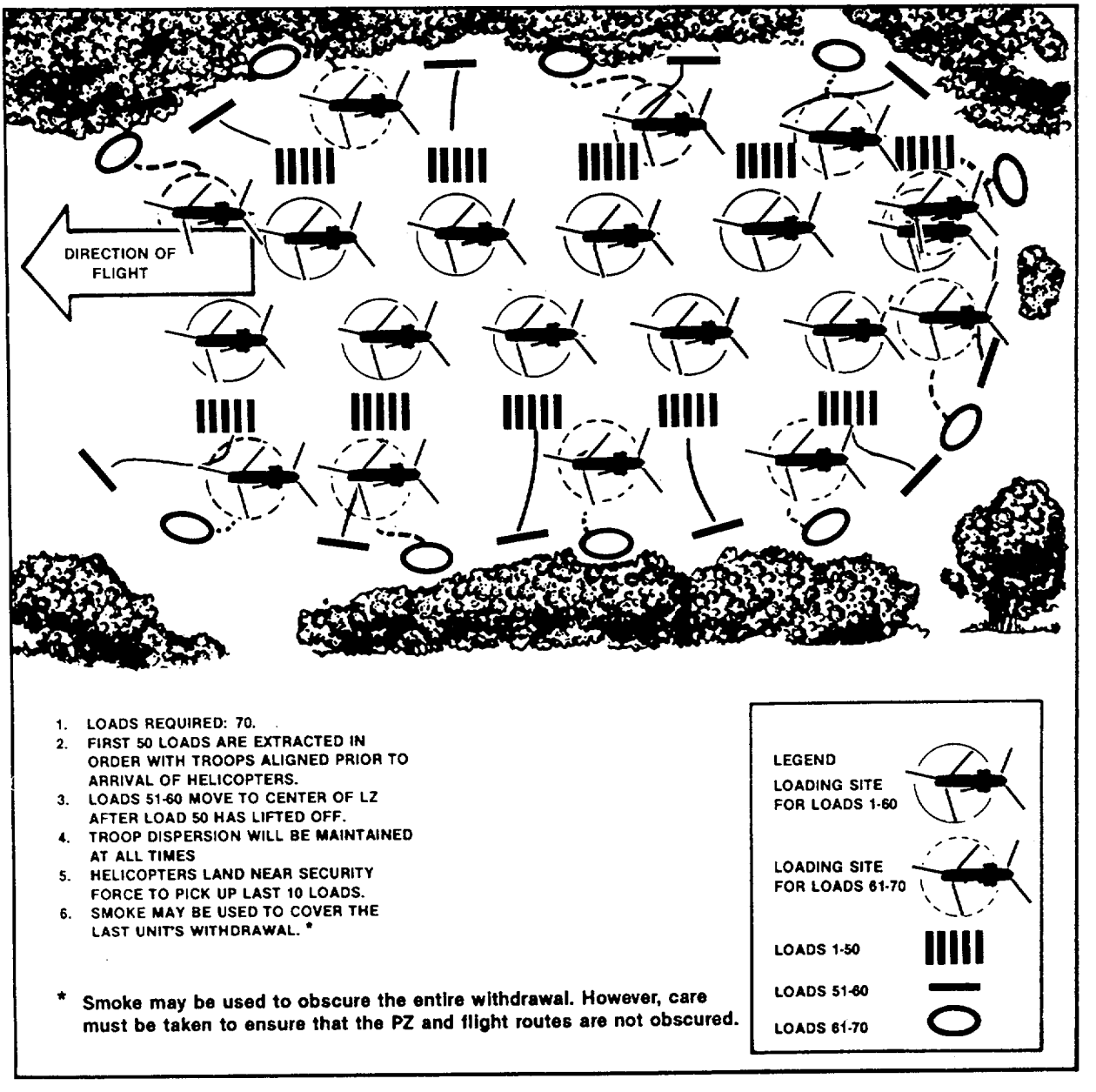

Figure 4-1. Withdrawal by Air Involving Movement Into and Defense of the PZ.

to the PZ, and withdraws. Security may be composed of small detachments from each subordinate unit, or it may be one of the subordinate units. The latter is usually best. Unit integrity aids control and gives more effective reaction in case of attack. Security elements protect the PZ at a time ordered by the unit commander conducting the withdrawal.

(b) Each aircraft withdrawing the security force lands as close as possible to its individual load. During this short interval, attack helicopter teams overwatching the withdrawal provide security. Panels, or other covert markers, identify each loading site (when the withdrawal is conducted during limited visibility, chemical lights or directional beacons are used).

(c) The last security element to withdraw achieves some protection by detonating Claymore Mines and firing automatic weapons just before loading. The loading and lift-off are executed quickly. Attack helicopter teams overwatch the lift-off.

(4) **Reserve.** A reserve, when designated, may remain airborne near the PZ or on standby in another area. This gives the commander a reaction force that can be employed as required to support withdrawal of the security force.

(5) **Fire Support.** During withdrawal, fire support is planned and executed to protect security elements as combat power on the PZ diminishes.

Section II. Helicopterborne Operations in Defensive Operations

4201. General

Defense is a coordinated effort to deny the enemy his purpose in attacking. Types of defense will not be discussed here because there is literally an infinite number of defensive techniques that a commander can select in developing a defense. The commander, by using METT-T analysis, can determine the best technique for a specific tactical situation. (See chapter 3, par. 3201.)

a. Helicopterborne Task Force in the Defense. The HTF can defend against an infantry-heavy threat by employing its mobility to achieve a maneuver advantage over the enemy. This advantage could allow the force to perform operations in the security area, main battle area (MBA), and rear area.

b. Security Area. The helicopterborne force may be able to conduct security force operations for a larger force. Normally, security area operations would consist of air reconnaissance and infantry, artillery, engineer, and attack helicopter operations to position combat power and CS quickly, in the most advantageous locations, during rapidly changing situations. Infantry and artillery assigned to security force operations must be provided enough helicopters to move the entire unit. The security area is generally organized based on the following:

(1) Number of Enemy Avenues of Approach Into the Security Area.

(2) Size and Type of Enemy Forces. Security area forces accomplish their mission by placing the majority of their combat units on the most dangerous avenues of approach into the security area. Air reconnaissance can deploy to the front and provide early warning of the direction, speed, and composition of enemy forces. Enemy units are taken under fire as soon as they are within range of weapons. As the enemy attempts to close with ground units of the security force, attack helicopters, artillery, and close air support provide firepower to enable ground units to displace by air to successive positions. Protection of helicopterborne infantry and antitank systems is achieved by superior mobility. Security area units attrite the enemy, deceive him as to the location of the MBA, slow his speed of advance, cause him to mass, and may cause him to divulge his intentions. Units are assigned subsequent missions in the MBA when the security area mission has been accomplished.

c. Main Battle Area. The MBA is that portion of the battlefield in which the decisive battle is fought to defeat the enemy. For any particular command, the MBA extends rearward from the forward edge of the battle area (FEBA) to the rear boundary of the command's subordinate units. The mobility advantage which the helicopterborne force has over enemy infantry-heavy units may allow it to defend in greater depth. The helicopterborne force defends by orienting on the destruction of advancing enemy forces and fights a series of battles in depth, attacking the enemy from the front, flanks, and rear while using minimal forces to maintain surveillance over the remainder to the assigned sector. Battle positions are selected and prepared throughout the MBA along likely avenues of approach. Primary and alternate LZs and PZs are selected for each battle position. When enemy fires preclude extraction of the helicopterborne force from battle positions, covered and concealed routes are selected for ground movement to alternate PZs. Only when absolutely necessary should a helicopterborne force be directed to occupy or retain terrain. If there is a situation in which the retention of terrain is essential to the defense of the entire sector, its retention is specified.

4202. Defensive Operations Against an Armor-Heavy Threat

a. General. A helicopterborne force is not well-suited to perform a defensive operation against mechanized forces on terrain favorable to mechanized operations. However, the helicopterborne force may effectively operate in the restrictive terrain of built-up areas or mountains or defend chokepoints.

b. Types of Operations. The helicopterborne force can conduct the following operations on the armored and mechanized battlefield in support of larger defensive operations:

- MBA operations in restrictive terrain.
- Economy of force or reserve.
- Rear operations.
- Flank security operations.
- Limited-objective counterattack operations or raids.
- Delay and withdrawal operations.
- Seizure of specific objectives for linkup operations.

c. Security Area. Attack helicopter and air reconnaissance units are the elements best suited for employment in security area operations when employed with mechanized units.

d. Main Battle Area. The helicopterborne force is not well suited to defend against armored and mechanized forces. If it is used to defend against such forces, it should be employed in restrictive terrain not favorable to employment of massed armor. The HTF can be employed in built-up areas, mountainous terrain, and heavily forested areas. Attack helicopters can be employed as a mobile, tank-killing reserve.

4203. Economy of Force

Defense in an economy-of-force role can be accomplished by displacing units of the HTF in depth on the avenue of approach throughout the sector. The air reconnaissance elements can screen areas where enemy attack is possible but unlikely. Combat units are repositioned to counter the major enemy thrust. After engaging the enemy and before the enemy closes on battle positions, units are picked up from designated PZs and organized in depth. The helicopterborne force essentially conducts a delay. Field artillery is repositioned as necessary to halt the enemy advance. Attack helicopter elements should be placed in direct support of the ground commander. Elements of the HTF held in reserve are rapidly transported by helicopter into areas under enemy pressure.

4204. Delay

a. Purpose. The key to success in the delay is the commander's ability to array forces in depth before the initiation of the delay. Decisive engagement is accepted only to the degree and extent necessary to accomplish the delay mission. Contingency plans for stay-behind operations should be developed. The HTF should continually look for and seize the opportunity to launch small-scale offensive helicopterborne assaults and attack helicopter raids into the enemy flanks and rear areas. A delay may be conducted to—

- Gain time so that other forces can deploy.
- Serve as an economy-of-force measure to allow concentration of friendly forces in other areas.
- Determine enemy composition, strength, intentions, and capabilities.
- Channel the enemy into selected areas and then destroy him.

b. Maintain Mobility. The helicopterborne force should seldom be given a time-delay mission. This type of mission would require the force to delay the enemy for a specified time and would restrict its mobility and subject it to unacceptable losses.

c. Delay in Sector. The delay-in-sector mission is more appropriate. The force disengages by helicopter before it is decisively engaged. Against armor forces, the force should displace at distances of no less than 1,500 meters and rely on attack helicopters to delay the armor while friendly infantry is extracted.

Section III. Other Tactical Missions

4301. General

This section discusses eight types of operations. Any one of these operations may be applicable in a helicopterborne mission.

4302. Screening

a. Purpose. A helicopterborne screening force provides early warning over an extended frontage. Screening missions are assigned to—

- Provide timely warning of enemy approach.
- Maintain visual contact and report on movement.
- Destroy or repel small enemy forces by employing organic and/or supporting fires.

b. Observation Posts (OPs). A screening mission employs a series of OPs overlooking enemy avenues of approach and the areas between them. Patrols cover dead space between OPs and cover other areas during limited visibility. When contact is established, the screening force withdraws on order, maintaining visual and/or electronic contact, and reports enemy movements. As in the delay, timely displacement is critical to force survival.

4303. Guard Force

The HTF can perform flank or rear guard missions for a larger force and help protect the main body from ground observation, direct fire, and surprise attack. As a guard force, the HTF has sufficient combat power to attack enemy reconnaissance forces and to delay an enemy attack until the main body can deploy. The rear guard follows the main body, occupying successive positions. The rear guard also screens between flank positions and rear elements of the main body. The HTF can conduct rear guard operations by moving from position to position. These movements are controlled by using designated phase lines.

4304. Covering Force

The air reconnaissance element can overfly rough terrain, find the enemy, and develop the situation. Units are deployed as necessary to ensure the uninterrupted movement of the main body. The covering force element may use one of the following two methods to conduct the covering force mission:

a. Reconnaissance elements reconnoiter while the HTF remains in assembly areas or on order to be available for commitment. When contact is made with the enemy and after the air reconnaissance has developed the situation, the HTF is committed to destroy the enemy.

b. Helicopterborne units can conduct covering force operations as other forces move by bounds behind the leading element.

4305. Reinforcement of Committed Units

a. Method. A HTF can reinforce a committed unit in three ways:

(1) With uncommitted units (reserves).

(2) With additional antitank assets.

(3) By moving artillery to weight the battle.

b. Reinforcement of Threatened Sectors. The MAGTF commander may direct the insertion of a helicopterborne unit to reinforce threatened sectors or add depth to the battle area.

c. Antitank Elements. Antitank elements may be taken from a reserve unit or a unit that is not

protecting an armor approach. Depending on the number of sections employed, the antitank element leader accompanies them for command and control. Tube launched, optically tracked, wire command link, guided missile system (TOW) elements are used for their long-range fires and accuracy. Careful consideration is given to planning the extraction of antitank elements because they may lack ground mobility in varying situations.

d. Artillery. Artillery batteries can be rapidly shifted about the helicopterborne battlefield to ensure fire support to committed units.

4306. Linkup Operations

a. Part of a Larger Force. When withdrawal of a HTF from the objective area is not planned or feasible, a linkup operation is conducted to join two forces. A helicopterborne force may participate as part of a larger force, or it may conduct a linkup with its own resources. Close coordination and detailed planning between the commanders of both units are essential. Some of the things that must be coordinated are as follows:

(1) Command Relationships. To delineate responsibilities, it is necessary to specify who assumes command upon linkup. The headquarters directing the linkup determines the command relationship, its effective time, and the responsibilities of each force during the operation.

(2) Liaison and Responsibilities. Once command relationships are established, the commanders of the units involved establish liaison. If conditions permit, the commander and liaison teams meet face to face; if not, then coordination is accomplished by radio or other available means, such as messengers. During the operation, the units attempt to maintain continuous radio contact with each other or with higher headquarters. As a minimum, the units exchange the following information:

- Enemy and friendly situations.
- Locations and types of obstacles (natural and artificial).
- Air defense control measures.
- Fire support plan.
- Recognition signals.

(3) Mutual Recognition Signal System. A system of mutual recognition signals is established and made known to all units participating in the linkup. Provisions are made for recognition procedures that may be used both day and night for air and ground elements alike.

(4) Communications. It is the responsibility of the headquarters directing the linkup to ensure communications-electronics operations instructions (CEOI) compatibility. If the linking units do not have the same CEOI, the higher headquarters directs one unit to change. The unit to change is normally the one not in contact, encircled, or breaking out. This is especially critical for recognition signals. If the units involved in the operation are neither under OPCON nor attached, they maintain their parent command nets.

(5) Schemes of Maneuver. Both units' scheme of maneuver, to include control measures, are exchanged. When a passage of lines is required after linkup, the control measures include primary and alternate linkup points, start points, routes, and release points.

(6) Fire Support. Fire support coordination measures are established and disseminated to both forces by the headquarters ordering the linkup. A restrictive fire line (RFL) is normally established on identifiable terrain as close as possible to the stationary force. The RFL prohibits the fires and the effects of fires from extending across the line without coordination with the affected force. Each force must be prepared to support the other as the situation dictates. Upon linkup or at some prearranged time, control of supporting fire becomes the

responsibility of the commander previously designated to have overall responsibility for the operation. Since the maneuvering unit is normally larger and has more supporting weapons and more reliable supply lines than the stationary helicopterborne force, the maneuvering unit can provide more support than the stationary unit. However, the stationary unit, since it is already in position, can provide some support to the maneuvering unit. Such support is limited by the amount of ammunition and the number and type of weapons assigned to the stationary unit.

(7) Actions After Linkup. The actions after linkup are specified in the order given to the units conducting the linkup. This ensures operational continuity and reduces massing of units. Actions may include reinforcing the defense of the area, conducting a coordinated attack, or passing the maneuver unit through the stationary unit to continue the attack.

(8) Assistance. This includes the mutual assistance that the stationary and maneuvering units can provide to each other. The stationary unit normally can provide only limited assistance to the maneuvering unit. The stationary unit, however, can normally provide the following:

- Guides.
- Lanes through obstacles.
- Traffic control.
- Limited logistical and maintenance support.
- Limited medical support (for example: holding areas for, and possible evacuation of, dead and wounded).
- Limited fire support.
- Information on recent enemy activity.

The maneuver unit normally provides more assistance because of its established lines of communications. However, if it experienced heavy combat during the move to the linkup, this assistance may be reduced. The maneuvering unit can normally provide logistical, maintenance, medical, and fire support.

(9) Alternate Plan. An alternate plan is developed to cope with unexpected enemy activity.

b. Linkup Points Are Occupied. When the maneuvering unit is within range and identified, communications are established between it and the stationary unit. Once linkup is effected, the two units follow the procedures for a passage of lines, and they continue their assigned missions.

4307. River Crossing Operations

By their makeup, HTFs may reduce CSS considerations during river crossing operations. Such forces may overfly the river or support bridge construction. Reconnaissance elements can be deployed by air to verify and collect essential intelligence on crossing sites and enemy dispositions. Objectives can be reached on the far shore quickly, eliminating enemy interference with development and use of crossing sites. Engineer bridging assets can be airlifted forward rapidly, eliminating traffic problems on the crossing site approaches. If a deliberate crossing is chosen, the HTF, with its increased mobility, can be used to clear the near shore of enemy resistance. During the actual crossing, whether it be hasty or deliberate, the helicopterborne force can assist by—

- Attacking enemy forces that interfere with the crossing by seizing objectives that would secure or assist in securing the bridgehead.
- Providing flank security.
- Securing crossing sites.
- Securing crossing sites with smoke.

4308. Rear Area Operations

Countering enemy airmobile, airborne, or guerrilla infiltration threats, the helicopterborne force monitors likely infiltration routes and probable target areas for enemy attacks from the rear. Probable LZs and PZs are identified and monitored by OPs or remote sensors. Potential infiltration routes in unoccupied terrain are monitored with sensors to detect the enemy as early as possible.

Air reconnaissance can provide wide-area surveillance and security, and can be integrated into reaction force plans.

Rear area operations are coordinated with the designated rear area commander. The HTF, as a potential reaction force, can be called upon to contain the enemy force if it does not have enough combat power to destroy it. Other forces would then be called upon to destroy the enemy.

4309. Limited Visibility Operations

a. A commander may desire to take advantage of limited visibility conditions to gain maximum surprise or deception; maintain the momentum of successful operations; reinforce or withdraw committed units; and/or deploy maneuver support elements.

b. The following aircraft operational requirements must be considered:

- Desired directions and routes of movement for aircraft (to include identification of selected terrain features).
- The identity and location of LZs and/or PZs.
- Emergency ground-to-ground signals.
- Directions and points of landing for aircraft.
- The presence of LZ obstacles is indicated to the aircraft commander through electronic and/or visual navigation aids.

c. Some advantages of limited visibility operations areas follows:

- Aircraft are partially concealed from enemy visual observation.
- Maximum surprise and confusion can be achieved.
- Continuous pressure can be exerted on the enemy.
- Effective enemy air defense fire and interdiction by enemy aircraft are diminished.

d. Disadvantages of limited visibility operations also exist. The need for more elaborate control measures and caution on the part of the aviators and troops slow operations. However, with proper equipment, constant training, and a thorough knowledge of techniques, these disadvantages may be overcome. The following factors are considered:

- More time is required for planning, preparation, and execution.
- Formation flight is more difficult, and formations are more dispersed.
- LZs and/or PZs used should be larger.
- Navigation is more difficult.
- Additional illumination is planned and immediately available to the helicopterborne force in case it is necessary for mission accomplishment.

4310. Operations in a Nuclear, Biological, and Chemical Environment

a. In the event of a nuclear attack, HTFs can conduct a radiological survey and, when feasible, move into the target area after the explosion to stall enemy exploitation of its effect. HTFs can rapidly and safely bypass obstacles created by a nuclear strike, whether their objective is within or beyond the target area.

b. When planning helicopterborne operations in conjunction with friendly nuclear munitions employment, the planner must consider the following:

- Effects of intense light on pilot vision.
- Effects of intense heat on equipment and personnel.
- Effects of blast waves on aircraft in flight.
- Residual radiation rates on the zones.
- Utilization of LZs/PZs; debris may prohibit their use.
- Effects of electromagnetic pulse (EMP) on electronic equipment.

- Selection of approach and retirement lanes into possible contaminated LZs.
- Use of alternate LZs when primary zones are judged as having too high a residual radiation rate.

c. Planning for helicopterborne operations in a toxic environment includes consideration of the following:

- Reconnaissance of areas known or suspected of contamination.
- Selection of routes and positions with regard to contaminated areas to avoid stirring up or spreading agents with rotor wash.
- Protection of supplies and equipment.

d. The three principles of NBC operations (contamination avoidance, protection, and decontamination) are fundamentals that increase survival.

e. If helicopterborne operations must be conducted following contamination, the helicopterborne force may direct that hasty (spot) decontamination of aircraft be accomplished. Spot decontamination is an effective means of decontaminating specific areas of an aircraft. This sustains flight operation since certain functional areas are treated before they are touched. Surfaces must be washed with decontaminants to flush agents off the aircraft skin. Small amounts of the NBC agent (absorbed into the fuselage paint) will probably remain after decontaminating. The evaporation of these residues can create a vapor hazard; therefore, personnel in and around the aircraft continue to wear the protective mask and gloves. Decontamination reduces the hazard of agent contact and transfer. Six functional areas applicable to spot decontamination are—

(1) Refueling procedures.

(2) Rearming procedures.

(3) Entry and exit from the aircraft.

(4) Preflight and postflight inspections.

(5) Maintenance inspections.

(6) Battle damage repair.

NBC personnel are trained in spot-decontamination procedures but may require equipment and support to effect all required decontamination quickly.

Chapter 5

Combat Support Within the Helicopterborne Force

Section I. Combined Arms Team

5101. General

Knowing CS capabilities, assigning CS units appropriate missions, and controlling CS operations is essential to the application of superior combat power at the decisive time and place. Understanding CS in helicopterborne operations and how the commander uses CS to enhance the combat power of the maneuver element, requires a complete understanding of the MAGTF concept.

5102. Marine Air-Ground Task Force

The MAGTF is a task organization of Marine forces under a single command and structured to accomplish a specific mission. The MAGTF components will normally include command elements (CEs), GCEs, ACEs, and CSSEs (including Navy Support Elements). Four types of MAGTFs which can be task-organized are Marine Expeditionary Force (MEF), Marine Expeditionary Brigade (MEB), Marine Expeditionary Unit (MEU), and the special purpose force (SPF).

a. Four Elements of a MAGTF

(1) Command Element. The CE is the MAGTF headquarters. It is a permanent organization composed of the commander, the general or executive and special staff sections, the headquarters section, and requisite communications and support facilities. The CE provides command, control, and coordination essential for effective planning and execution of operations by the other three elements of the MAGTF. There is only one CE in a MAGTF.

(2) Ground Combat Element. The GCE is task-organized to conduct ground operations. The GCE is constructed around an infantry unit and varies in size from a reinforced rifle company to one or more reinforced Marine division(s).

(3) Aviation Combat Element. The ACE is task-organized to provide all or a portion of the functions of Marine aviation to the MAGTF in varying degrees based on the MAGTF mission, tactical situation, and size. The ACE may vary in size from an aircraft squadron (–) (REIN), to one or more Marine aircraft wings (MAWs). Normally, there is only one ACE in a MAGTF.

(4) Combat Service Support Element. The CSSE is task-organized to provide the full range of CSS necessary to accomplish the MAGTF mission. The CSSE can vary in size from a MEU service support group (MSSG) to one or more force service support groups (FSSGs). Normally, there is only one CSSE in a MAGTF.

b. Types of MAGTFs. The task organizational principles inherent in the MAGTF concept provide for flexible design which can be adapted to a variety of contingency missions as well as tailoring to a specific mission. Notwithstanding the wide range of organizational possibilities, MAGTFs will be designated either a MEF, MEB, MEU, or SPF.

(1) Marine Expeditionary Force. A MEF is the largest and most powerful of the MAGTFs. It may range in size from less than one to multiple infantry divisions and aircraft wings, together with an appropriate CSS organization.

(2) Marine Expeditionary Brigade. The MEB is normally built around a reinforced infantry regiment and a task-organized Marine aircraft group. The MEB may be supported from its sea base, facilities ashore, or a combination of both. MEBs have the capability to serve as the forward element of a deploying MEF.

(3) Marine Expeditionary Unit. The MEU is normally built around a reinforced infantry battalion and composite helicopter squadron. It is a task-organized, forward-deployed MAGTF commanded by a colonel and employed to fulfill routine forward afloat deployments.

(4) Special Purpose Force. The SPF is the smallest air-ground task force and can be of any size smaller than a MEU. It is organized for rapid deployment to conduct a specific mission of limited duration.

5103. Concept of Employment

The MAGTF is not a permanent organization; it is task-organized for a specific mission(s) and, after completion of that mission, is dissolved in accordance with prearranged plans. The forces identified with a MAGTF may be notional forces for planning purposes or specifically identified organizations for a contingency mission. The forces which compose the GCE, ACE, and CSSE for a MAGTF are normally identified in an activation order promulgated by the appropriate Fleet Marine Force (FMF) commander.

a. MAGTF Deployment. MAGTFs task-organized for amphibious operations usually deploy as the landing force aboard amphibious task force shipping. MAGTFs may also be deployed for rapid response or reinforcing roles by use of tactical or strategic air or sealift. MAGTFs may be formed and deployed for combat, contingency deployments, and training exercises. They may be committed to combat from contingency deployments.

b. MAGTF Employment. When employed in other than amphibious operations, MAGTFs are capable of functioning as self-sustaining uni-Service forces under the Combatant Command (command authority) of unified, or subordinate unified, or joint task force (JTF) commanders. (For more information on the MAGTF, see FMFM 2, *Marine Air-Ground Task Force Operations* [currently under development].)

5104. Employment of Combat Support

To understand CS in the MAGTF concept, the reader must think of CS as more of a mission than a specific unit(s). As indicated in MAGTF combined arms doctrine, CS is organized under the C^2 of the GCE. In most cases, it is the GCE commander who will assign CS units specific missions. The GCE commander will also task-organize CS units for movement and assign support relationships for subordinate maneuver units.

a. Combat Support Units. CS units are normally under the OPCON or in DS of the HTF to ensure the close coordination and continuous, dedicated support required in helicopterborne operations. In some situations, CS units will be attached.

b. Task Organization. In most cases, CS units will be assigned to support the GCE. The GCE

may assign a CS unit that is attached, under OPCON, or in DS, to one of his subordinate maneuver units when he feels the unit could be more effectively controlled or employed by one particular unit rather than under the GCE commander's control. GS is used when the CS unit can best support the operation under centralized control in order to quickly shift its efforts to the point needed.

c. GCE's Responsibility to Support CS Units. No matter what support status the CS units are assigned, the GCE has the responsibility to ensure CS units are properly supported. Although the GCE is not required to provide support under the status of DS or OPCON, it is to his advantage to ensure CS units are properly supported. This means providing rations, fuel, and ammunition as required. It also means expediting repair of equipment outside the capabilities of the GCE. This enables CS units to provide continuous support to the GCE.

d. Staff Relationship. The commander of the CS unit must be both a commander and a special staff officer. This means he commands his unit and provides advice and assistance to the helicopterborne GCE, the MAGTF commander, and the MAGTF staff. He serves as a special staff officer during the planning phase of an operation, providing assistance and advice in the preparation of the operation order. He can also provide advice and assistance during the conduct of the operation, but is limited since his primary concern is command of his unit.

Section II. Fire Support

5201. General

Fire support is the collective and coordinated employment of mortars, artillery, attack helicopters, CAS, naval gunfire, and other fires in support of the battle. The mission of the fire support system is to destroy, neutralize, or suppress surface targets in support of helicopterborne operations. It includes SEAD which is imperative in helicopterborne operations.

a. Objective. The commander integrates the firepower of mortars, artillery, CAS, EW, and when available, naval gunfire, with the maneuver of combat units to defeat the enemy. Fire support enhances the combat power of the helicopterborne force by—

- Destroying, suppressing, and neutralizing targets.
- Obscuring the vision of enemy forces.
- Isolating enemy formations and positions.
- Slowing and canalizing enemy movements.
- Killing or disabling the enemy at ranges greater than that of direct fire weapons.
- Screening with smoke or creating obstacle areas with the employment of scatterable mines.
- Reducing the effects of enemy artillery by active counterfire.
- Interdicting follow-on enemy echelons.
- Providing illumination.

b. Artillery Support Relationships. To effectively utilize fire support assets, the HTF must understand artillery support relationships. The artillery force commander commands his unit and serves as a special staff officer to the HTF commander during planning and preparation for the operation. In those instances when the task force is operating independently, it may be necessary to attach an artillery unit to provide adequate fire support. Attachment is a nonstandard mission and involves special considerations for the task force commander, such as the responsibility to provide security, logistical support, and lift capability to the artillery unit.

5202. Fire Support Coordinator

While the HTF commander is responsible for the integration of all fires with the scheme of maneuver, the FSC is his principal assistant for the proper integration and application of fire support. The commander and his FSC generate the maximum combat power available to support the operation.

5203. Fire Support Delivery Means

The HTF is unique in its mission, organization, and its support elements. Because of its uniqueness, the fire support delivery means for helicopterborne operations must be specifically tailored to be integrated into the helicopterborne force. The indirect fire assets must be light and maneuverable and capable of maintaining the fast pace of the helicopterborne force. The fire support delivery means available to the HTF may include the following:

a. Mortars. Organic to each rifle company and infantry battalion, they are used to provide close-in fire support.

b. Artillery. Artillery must either be positioned well forward to provide fires from the PZ to the objective area or must be air lifted with the helicopterborne force to the objective area.

c. Air Defense. Supporting air defense (LAAD and/or Hawk) missile units can be called upon to provide support when the situation demands and the commander so directs.

d. Close Air Support. CAS will be available to provide support. Preplanned missions should be used to the maximum extent possible. CAS aircraft can be used to screen approach and retirement lanes.

e. Naval Gunfire. Naval gunfire spot teams may be attached to the HTF if naval gunfire is available.

f. Attack Helicopters. Because of their mobility and firepower, attack helicopters may be integrated into the fire support plan when other fire support means are not available. Mission priority for attack helicopters is to escort transport helicopters.

Section III. Fire Support Planning and Coordination

5301. General

a. Fire support planning addresses how fire support is to be used to support maneuver forces. Fire support coordination entails those actions needed to implement plans and manage resources on the battlefield. Although planning and coordination are separated, they overlap and are mutually supporting in the fire support process. If the planning has been done well, the implementation (coordination) will give the commander the support he needs to win. For more discussion on fire support planning and coordination, see FMFM 7-1, *Fire Support Coordination.*

b. The planning and coordination process begins when the mission is received or assumed. The HTF commander, S-3, and the FSC interact throughout the planning sequence, the decision process, and the execution of the mission.

(1) The range of supporting artillery will be an initial consideration when planning helicopterborne operations. The primary reason is that helicopterborne operations may often be conducted beyond the range of artillery support. In these cases, consideration must be given to prepositioning artillery forward prior to the assault or planning for additional fire support, such as naval gunfire, CAS, and attack helicopter, until the direct support artillery can be moved into the area of operation.

(2) LZ preparations may be fired in support of a helicopterborne assault. Preparations are directed against known, suspected, or likely enemy positions dominating the LZ or on the zone itself. The following factors should be considered:

- Effects of fire in creating obstacles to friendly forces during landing or maneuver.
- Whether the effects of the preparation will justify loss of tactical surprise or afford the enemy sufficient time to change his tactical disposition.
- Use of fire support on the LZ itself to detonate mines or booby traps or to reduce obstacles.
- Firing of dummy preparations to deceive the enemy.
- Possible conflict between gun-target lines and helicopter approach lanes.
- Availability of fire support units and ammunition.

(3) Fires must be planned to support the consolidation of the LZ and subsequent operations.

(4) The SEAD weapons during the approach and retirement of helicopters is fundamental to success and survival.

5302. Fire Support Planning

a. The goal of fire support planning is to integrate fire support effectively into battle plans to maximize combat power. To achieve this, the fire support planning process determines—

- How fire support will be used.
- What types of targets will be attacked.
- When the targets will be attacked.
- What means will be used to attack.

The fire support planning process should be sufficiently flexible to accommodate the unexpected in combat. This planning process is the continual process of analyzing, allocating, and scheduling fire support to integrate it with maneuver in order to optimize the combat power of a force.

b. Fire support planning for helicopterborne operations must be detailed, closely coordinated, and

fully integrated. This planning should include all available fire support, including close air support and attack helicopters. In addition, employment of air defense weapons must be integrated with fire support and maneuver. Fire support planning is performed concurrently with battle planning. Fire support planning techniques and measures specific to helicopterborne operations are discussed in chapters 3 and 4.

c. Fire support planning is the responsibility of the supported commander and is normally accomplished for him by the FSC, working under the staff cognizance of the G-3/S-3. Integrated fire support can result only when the FSC is an aggressive contributor to the commander's planning sequence and decision-making process.

d. To facilitate fire planning, company commanders attend operation order briefings. This permits the company commander to hear the operational concept simultaneously with their commander. Within minutes after the order brief, they can get together with the FSC to develop their fire support plans. This arrangement also allows the FSC to brief company commanders on the plans the force wants to implement. Written fire plans can be disseminated. Questions can be answered quickly and conflicts can be resolved with minimum confusion.

(1) Planning Time. The depth and detail of fire support planning depend on how much time is available. Many of the actions that occur in response to battle situations are established in SOPs and in fragmentary orders (FRAGOs).

(2) Continuous and Concurrent Planning. Fire support planning is continuous and concurrent at all levels. During the battle, planning is concurrent with fire support coordination to implement the fire support plan on the battlefield.

(3) Plan for Total Integration of Fire Support. The fire support plan outlines the way artillery, mortars, CAS, naval gunfire, and air defense weapons are used to complement the scheme of maneuver and provides instructions for executing those fires. It also details the use of HTF target acquisition assets. The fire support plan prioritizes targets, matches them with the available fire support systems, and allows fires to be executed quickly (without specific direction from the commander) once the operation starts. The HTF fire support plan should include—

- A detailed concept of how fires will support the helicopterborne operation from the initial PZ to the final objective.
- A target list that includes locations where fires are expected or likely to be used.
- A priority of fires telling which element receives fire in case of conflict (for example, priority of artillery fires to first platoon and mortar fires to second platoon).
- Target attack priorities establishing which type of mission to fire first in case of conflict (for example, first priority to enemy air defense systems; second priority to assist disengagements).
- An allocation of priority targets to indirect fire assets, if designated.
- Firing schedules for the indirect fire weapon systems. This planning tool identifies who fires the mission, when it occurs, and the nature of fires (for example, FASCAM, smoke, SEAD preparations).
- Informal ACAs.
- Coordination measures for providing troop safety and promoting synchronization of supporting fires.

e. Displacement of Fire Support. During the planning of fire support for a helicopterborne operation, the FSC must consider displacement. When artillery can support the HTF's movement from a secure area (without displacing forward), it does so. If such support is not feasible, the FSC determines if other fire support is sufficient to accomplish the mission. If other support is not sufficient, it may be necessary to displace the artillery into the objective area. When the decision to displace is made, consider the following:

- Displacement is accomplished by echelon to prevent temporary loss of artillery support.
- Artillery requires security in the objective area.
- The CH-53 will probably be required to displace the artillery unit. The CH-46 can move the M-101A1 105mm howitzer.
- Ammunition resupply will probably have to be done by air.
- Artillery must depend on helicopter assets for mobility unless prime movers can be lifted into the objective area.
- Supporting, towed artillery (M-198 or lighter) must be available.

f. Fire Support Coordinator (FSC). The fire support plan is developed by the FSC with assistance and input from the air officer, artillery liaison officer, mortar platoon commander, S-2, and other CS personnel as task organization provides. The fire support plan is constantly refined or modified as the operation continues. The fire support plan facilitates responsive fires to the HTF wherever they are needed.

g. Formal and Informal Planning Approach. A formal and/or informal planning approach at the HTF level is a combined process that uses the principles of both formal (downward) and informal (upward) planning. Initially, the HTC disseminates, in the operation order, a fire support plan to support the force. This product usually contains all the elements listed above. The fire support coordination plan is modified as company plans are received. The rewritten fire plan is disseminated to supporting arms systems for execution.

h. Enemy Air Defense. SEAD is a critical task in fire support to ensure success of the helicopterborne operation and must be planned. In helicopterborne operations, transport helicopters are especially vulnerable to enemy air defenses. Unless there are overriding tactical considerations, enemy air defense positions are always avoided. If enemy air defense positions cannot be avoided, they must be aggressively suppressed. SEAD may be executed either as scheduled fires based on a specific time schedule, or SEAD may be fired on call based on the movement of the helicopterborne force through predetermined approach and retirement lanes or across predetermined phase lines.

The FSC ensures that all flight routes and suspected enemy ADA sites are targeted with preplanned fires. The FSC is normally located with the commander and requires a dedicated fire direction net; he will control the lifting and/or shifting of SEAD fires as directed by the commander. Attack helicopter's providing escort security will suppress enemy ADA encountered en route. The flight coordinator should select overwatch positions or fly escort along the flight route to provide immediate suppressive fires. For a complete discussion of these techniques, see NWP 55-9-ASH, FMFM 5-3, *Assault Support Tactical Manual.*

i. Categories of Fire. The fire support plan may include any of the following categories of fire designed to complement the operation:

- Planned fires on known or suspected enemy locations, avenues of approach, supply routes, and suspected weapons locations.
- On-call fires (prearranged fires that are requested).
- Preparations.
- Counterpreparations.
- Counterfires.
- Artillery delivered smoke (obscuration or screening).
- Illumination.
- Suppression fire.
- Scatterable mines (FASCAM can be delivered only when 155mm howitzer systems are available to the force).

5303. Fire Support Coordination

Fire support coordination is the planning and executing of fire. Fire support coordination ensures that

targets are adequately covered by a suitable weapon or group of weapons. Some typical fire support coordination tasks include—

- Clearing requests for fire support.
- Selecting the best supporting arm to attack a target.
- Requesting additional fire support when needed.
- Responding to intelligence reports by requesting supporting arms to attack high priority targets.
- Coordinating the simultaneous use of different supporting arms, particularly aircraft and surface weapons.
- Synchronizing fires to support maneuver elements.

a. Decentralized Execution. Effective fire support depends on decentralized execution and coordination. Based on the commander's intent for using fire support, the FSC and companies execute the plan during the operation with minimum specific instruction. The FSC's coordination includes all actions required to make the plan work. The FSC—

- Ensures that the DS artillery battalion, the mortar platoon, and any other supporting units have the correct fire support plan and that they understand their portion of it.
- Monitors execution of the fire support plan.
- Verifies that the mortars are in position to support, if available and if required. Mortars are particularly useful in protecting PZs.
- Selects fire support means to attack targets during the operation.
- Keeps fire support representatives at higher headquarters and the supporting artillery informed of the current tactical situation.
- Keeps the commander and S-3 informed of the current status of fire support means available to the helicopterborne force.
- Recommends modifications of the fire support plan (during the operation) to react to battlefield changes and ensures that maneuver units are aware of changes.
- Recommends to the commander and/or S-3 fire support coordination measures to facilitate the attack of targets or to provide troop safety.
- Coordinates requests for additional fire support with higher level fire elements.

b. Plan Must Remain Supportable. The FSC ensures that the plan developed remains supportable. The FSC must immediately inform the commander or the S-3 if there is not enough fire support allocated to make the plan work or if changes are necessary to the plan. To do this, he must be forward with the command group during the conduct of the helicopterborne operation. He normally flies with the commander when a C^2 helicopter is used.

c. FSC Coordinates All Fires. The FSC keeps abreast of the tactical situation and coordinates all fire support impacting in his zone. The FSC ensures that fires do not jeopardize troop safety, interfere with other fire support means, or disrupt adjacent unit operations. In this coordination, the FSC can utilize fire support coordination measures. During the conduct of the operation, shifts in priorities of fire, changes to the fire plan to support a changed scheme of maneuver, and immediate CAS are all handled forward by the FSC and AO with the command group. The FSC, in close conjunction with the S-3 and AO, coordinates the fire control activities of the HTF.

d. Controlling Fire Support. Fire support is controlled by the maneuver units. Additionally, all AOs and FACs are trained to call for and adjust indirect fires. FAC(A)s and TAC(s) can be particularly valuable in assisting the HTF in coordinating or adjusting indirect fires because they may be in the best position to see the battlefield.

Section IV. Artillery Helicopterborne Operations

5401. General

The HTF fights both offensive and defensive battles. Its organizational tactics, emphasizing aerial mobility and flexibility, require special planning considerations for employment. As discussed in section III, the FSC plans (with the commander) to support the ground tactical plan. In planning to support operations, the FSC considers the following:

a. Range for Artillery and Other Support Systems. With the extended distances anticipated, the challenge for the FSC is to position fire support systems so that they can range (place fire) and mass (concentrate fire) on targets within the helicopterborne area of operation. When the force must operate out of artillery range, there is a greater dependence on CAS, attack helicopters, and mortars.

b. Importance of the Target. Artillery is positioned to range those targets considered critical to the maneuver commander. For high value targets, the commander and the FSC may consider moving artillery by helicopter to strike deep in the enemy's rear by firing across the FLOT or displacing laterally in sector.

c. Airlift Assets. The 105mm howitzer is particularly useful in most helicopterborne operations because of its mobility. In taking advantage of its mobility to weight the operation, the commander must consider the cost of aircraft assets. Additional aircraft must be committed to movement of vehicles and supplies necessary to support the mission.

d. Risk in Crossing Lines. A major consideration in planning the movement of artillery in helicopterborne operations is the risk in crossing enemy lines/positions. The value of the target is weighed against the chances of survivability. Once the risk of moving artillery by helicopter is considered, the S-3 and FSC must evaluate the survivability of the artillery unit on the ground and during extraction from the firing area.

e. Target Location. Artillery movement in helicopterborne operations requires pinpoint LZ and target locations. Accuracy of locations determines accuracy of fires and often targets will be engaged with unobserved fires.

f. Pickup Zone and/or Landing Zone. Artillery displacements require PZs and LZs large enough to position equipment. When the artillery unit arrives at the LZ, it must be secure and capable of providing the unit with a firing point(s).

g. Ammunition. The amount of ammunition that can be made available has a major impact on artillery support in helicopterborne operations. When planning indirect fire support, the FSC must consider the amount of ammunition required and the availability of transportation assets. Artillery ammunition supply operations will place a significant burden on aviation assets available to the HTF.

h. Communications. In the employment of artillery, the ability to maintain communications is a requirement. The supporting unit must be within radio range of the supported unit to receive the call for fire (this is of particular concern when positioning the M-198 with its maximum range of 30 kilometers [km]). Unless unavoidable, the firing batteries must be within communications range of their parent battalion.

i. Security. The artillery must rely on terrain positioning and infantry for security during helicopterborne operations.

5402. Capabilities

Artillery supporting HTFs should be organized with capabilities to match the needs peculiar to the helicopterborne assault.

a. The type of howitzer likely to participate in helicopterborne operations is the towed 105 mm howitzer. Characteristics of the weapon and 105 mm equipped units are listed below:

- Responsive. Capable of high rate of fire.
- Lightweight. Capable of external sling load by the CH-46 and CH-53D and E models.
- Easily sustainable. Towed artillery is less prone to downtime because it is not tied to a self-propelled carriage. It has reduced logistics requirements for a prescribed load list (PLL) and petroleum, oil, and lubricants (POL) than self-propelled artillery.
- Lack of crew protection. The crews of towed howitzer batteries are especially vulnerable to direct and indirect fire. With no armor protection, the battery can expect heavy losses if engaged by the enemy.
- Position security. The mission of artillery is to provide indirect fires. Artillery is not designed with the capability to defend itself against a significant threat that may be encountered in helicopterborne operations.
- Limited range. The 105 mm howitzer has a maximum range of 11,500 meters (15,100 with rocket assisted projectiles). The helicopterborne force can rapidly outdistance its supporting artillery.
- Caliber. The 105 mm howitzer is the smallest caliber howitzer in the Marine Corps inventory with a shell-burst radius of 35 meters.
- Ammunition. The 105 mm howitzer is limited to conventional munitions high explosive (HE), illumination (ILLUM), improved conventional munitions (ICM), white phosphorus (WP), smoke with limited chemical capability. The FASCAM is not available except to 155 mm howitzer equipped units.

b. The M-114A2 155(T) howitzer can be lifted by the CH-53D and E models. High temperature and elevation, among other factors will degrade the "D" model's ability to lift the M-114A2.

c. The M-198(T) can be lifted by the CH-53E. The CH-53E can lift all howitzer prime movers.

Section V. Air Defense in Helicopterborne Operations

5501. Fundamentals of Helicopterborne Operations Air Defense

History has shown that air superiority must be achieved if amphibious and ground combat operations are to succeed. Air superiority according to Joint Pub 1-02 is that degree of dominance in the air battle of one force over another which permits the conduct of operations by the former and its related land, sea and air forces at a given time and place without prohibitive interference by the opposing force. Achieving air superiority does not require that all of the enemy's aircraft be destroyed before amphibious and ground operations can be conducted. However, it does require that the enemy's air operations be restricted to a level which prevents them from significantly interfering with the MAGTF's vital areas and maneuver forces.

Due in large part to the vast number of aircraft available to threat forces, the MAGTF's ability to achieve air superiority in future battles is projected to be limited. When achieved, air superiority will probably apply only to specific areas of the battlefield for short periods of time. The impact of this forecast on helicopterborne operations is substantial. Helicopterborne operations conducted in areas of the battlefield where the MAGTF does not enjoy air superiority will be difficult. Therefore, the effective use of the limited MAGTF air defense assets becomes an important consideration in planning and executing helicopterborne operations.

Since the number and type of air defense systems that can accompany a helicopterborne force are limited, and because helicopters are vulnerable to attacking aircraft and enemy ground-based air defense weapons, intelligence information must be reliable. The commander must give much thought to the feasibility of using helicopters as the tactical situation changes. In addition to employing active air defenses, helicopterborne forces must maximize the use of passive air defense measures, such as flying at night, using nap-of-the-earth techniques, and using well-dispersed flight formations.

5502. Antiair Warfare

a. The primary purpose of AAW is to gain and maintain air superiority. According to Joint Pub 1-02, AAW is a US Navy/US Marine Corps term used to indicate that action required to destroy or reduce to an acceptable level the enemy air and missile threat. It includes such measures as the use of interceptors, bombers, antiaircraft guns, surface-to-air and air-to-air missiles, electronic countermeasures, and destruction of the air or missile threat both before and after it is launched. Other measures which are taken to minimize the effects of hostile air action are cover, concealment, dispersion, deception (including electronic), and mobility.

b. All MAGTF AAW operations fall into two categories—air defense and offensive antiair warfare:

(1) Air Defense. All defensive measures designed to destroy attacking enemy aircraft or missiles in the earth's envelope of atmosphere, or to nullify or reduce the effectiveness of such attack. (Joint Pub 1-02)

(a) Active Air Defense. Direct defensive action taken to nullify or reduce the effectiveness of hostile air action. It includes such measures as the use of aircraft, air defense weapons, weapons not used primarily in an air defense role and electronic warfare. (Joint Pub 1-02)

(b) Passive Air Defense. All measures, other than active air defense, taken to minimize the effectiveness of hostile air action. These measures include deception, dispersion and the use of protective construction. (Joint Pub 1-02)

(2) Offensive Antiair Warfare (OAAW). Combat operations conducted to destroy, disrupt, or limit enemy air power as close to its

source as possible. OAAW operations are used to destroy or neutralize hostile aircraft, airfields, radars, air defense systems, and supporting areas.

For a complete discussion of AAW, see FMFM 5-5, *Antiair Warfare*. The remainder of this section will discuss the air defense requirements of helicopterborne operations.

5503. MAGTF's Air Defense Capabilities

Ideally, the MAGTF's integrated air defense system (IADS) and effective OAAW operations will provide air superiority throughout the MAGTF's area of responsibility. The development and fielding of lighter, more mobile air defense systems (such as the Hawk contingency fire unit [CFU] and the air defense variant of the light armored vehicle [LAV/AD]) will enhance the MAGTF's ability to move ground-based air defense systems closer to the FEBA. This will significantly improve the MAGTF's ability to *reach out and touch* enemy aircraft beyond the FEBA before they can inflict damage on our forces.

Despite the ACE commander's efforts to produce an IADS which provides an air defense umbrella over the entire battlefield, there will be situations when a unit conducting a helicopterborne operation will have LZs in areas which cannot be adequately covered by the MAGTF's existing IADS. If an air threat is present in these areas not covered by the existing IADS, it will be necessary to provide the helicopterborne unit with air defense assets specifically designated for the operation.

The scope of the operation and the air threat, as well as the availability of air defense assets will drive the type of air defense assets provided to the helicopterborne unit. The type of assets that may be employed cover a wide range of possibilities: air-to-air capable fixed-wing and rotary wing aircraft, Hawk firing units, and Stinger firing units. In addition to these aircraft and dedicated air defense systems, commanders should consider the air defense capabilities of their unit's organic small arms and machine guns. These weapons can provide an excellent LAAD capability. The key to the employment of these weapons against low-flying aircraft is coordinated, high-volume fires. See FMFRP 5-54, *Small Arms Defense Against Air Attack*, for more information concerning the use of organic small arms and machine guns in an air defense role.

The principles and guidelines for the employment of air defense weapons are essentially the same for helicopterborne operations as for other operations. Command and support relationships between air defense units and supported units must be clearly defined. These relationships are modified, as necessary, as the operation progresses. FMFM 5-52, *Employment of the Low Altitude Air Defense Battalion*, provides a complete description of command and support relationships, as well as the steps a commander should take in establishing an effective air defense plan.

5504. A Typical Helicopterborne Operation Scenario for a MEF

a. Figure 5-1 shows a typical helicopterborne operation scenario for a MEF. To exploit a weakness in the enemy's forces, the MAGTF commander has decided to helo lift a regiment into two LZs approximately 40 km in front of the FEBA. As shown in the figure, the regiment will be landing in an area well out of the range of the MAGTF's currently emplaced ground-based air defense systems.

b. Because this operation is of extreme importance to the success of the MAGTF's mission, the MAGTF commander has decided to commit MAGTF air defense resources in direct support of this operation. In addition to the regiment's organic small arms and machine guns, the air defense weapons available to the MAGTF commander include—

(1) AAW-Capable Fixed-Wing Aircraft. All Marine Corps fixed-wing aircraft, with the exception of the EA-6B and KC-130, are capable of carrying air-to-air missiles. AAW-capable, fixed-wing aircraft can be broken down into three categories:

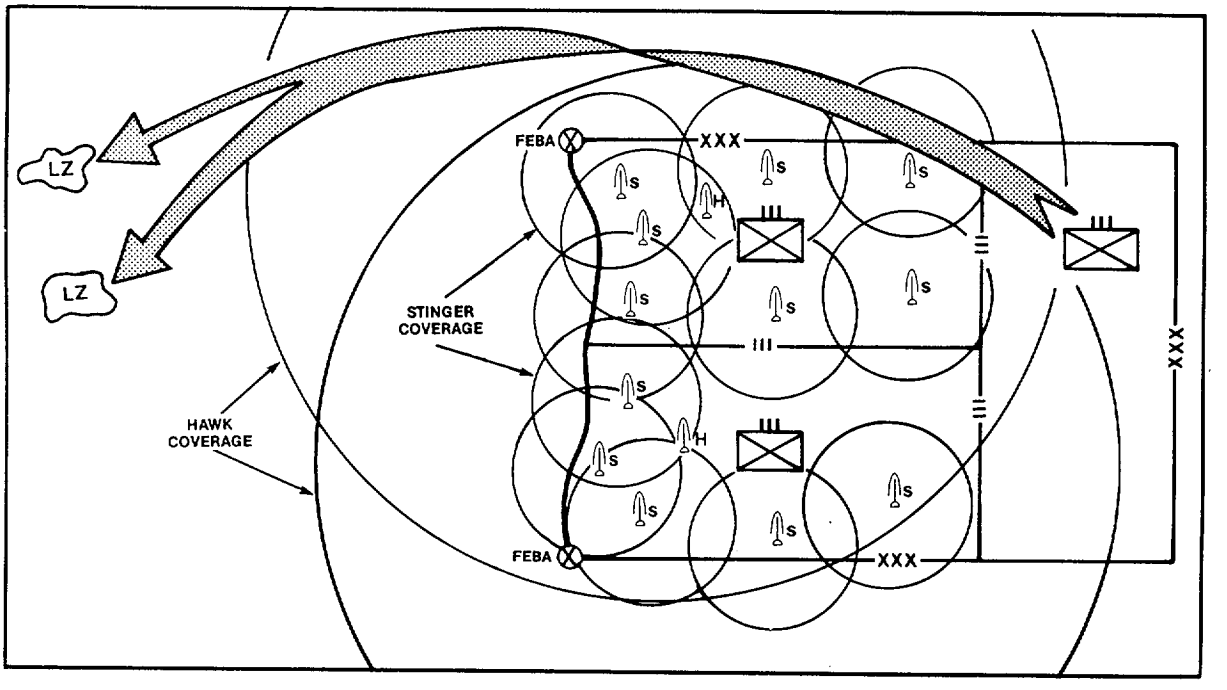

Figure 5-1. Typical Helicopterborne Operation.

(a) Radar-Equipped Fighters (F/A-18 and F-4). In addition to their AAW role, these aircraft provide the MAGTF with a wide variety of capabilities to include air reconnaissance and OAS which includes close and deep air support.

(b) Nonradar Equipped Attack (AV-8B) and Observation (OV-10) Aircraft. The aircraft require cuing from outside sources and rely on visual target acquisition for air-to-air engagements.

(c) Radar-Equipped Attack Aircraft (A-6). Although the radar in the A-6 can be used to detect other aircraft under extreme circumstances, the A-6 should not be considered as a primary AAW platform. The A-6's radar is designed to *look down* at the earth's surface to support its primary ground attack role. In an emergency, an A-6 pilot can point the nose of his aircraft up to *see* air targets. Otherwise, like the AV-8B and the OV-10, the A-6 requires outside cuing and visual target acquisition for air-to-air engagements.

(2) AAW-Capable Attack Helicopters. Currently, the Marine Corps has one helicopter capable of carrying air-to-air missiles, the AH-1. The AH-1 has no radar and must rely on outside cuing and visual target acquisition.

(3) Hawk Firing Units. These units provide an all-weather, around-the-clock, low-to-medium altitude air defense capability with a range of about 40 km. All of the Hawk system components are helicopter transportable (typically 5,000 to 10,000 lbs.). Hawk firing units can be task-organized. Possible variations range in size from a battalion with two firing batteries to the small, highly mobile CFU. Each firing battery has eight launchers (24 missiles) and full automatic data processing (ADP) capability provided by a battery command post (BCP) van. A battery requires approximately 25 5-ton

trucks for mobility. The CFU has one or two launchers (three to six missiles) and a minimum of ADP capabilities provided by a laptop computer in place of a BCP. A CFU requires approximately three 5-ton trucks. Hawk units possess integral IFF and digital data link capabilities.

(4) Stinger Firing Units. Stinger-equipped units provide short-range, LAAD coverage for the MAGTF. The firing section is the smallest tactical Stinger unit. The firing section consists of a section headquarters (section leader and two radio operators) and five 2-man firing teams. The firing team consists of a team leader/gunner and a gunner/driver. Both team members are trained as gunners and in communications, target detection, and aircraft recognition. Normally, the gunner/driver will actually fire the Stinger missile, allowing the team leader to evaluate targets and make engagement decisions. However, during periods of intense enemy air activity, both may act as gunners to increase the team's rate of fire.

Each Stinger section leader has an organic lightweight early warning detection device (LEWDD). The LEWDD is a portable radar providing short-range (20 km), low-altitude (under 8,000 ft.) coverage. Section leaders have laptop computers (called fire direction units [FDUs]) which allow them to transmit either LEWDD or Hawk radar target data to teams equipped with laptop computers (called weapon director units [WDUs]). In addition, section leaders can communicate with their teams using man-portable VHF radios. Communications with higher headquarters/air control agencies are normally accomplished with man-portable HF radios and digital communications terminals (DCTs).

5505. Air Defense Planning Considerations

a. As part of the helicopterborne operation planning process, the MAGTF commander and his major subordinate commanders develop an air defense plan to support the operation. For the regimental lift shown in figure 5-1, the goal of the air defense plan is to provide continuous air defense coverage for the regiment from the time it leaves the PZs until it completes its mission.

b. In developing an air defense plan, the commanders consider the following:

(1) Regiment's Scheme of Maneuver

(2) Regimental Commander's Air Defense Priorities. The regimental commander evaluates his unit's assets and establishes his air defense priorities by evaluating each asset for criticality, recuperability, and vulnerability. See chapter 5 of FMFM 5-52, *Employment of the Low Altitude Air Defense Battalion*, for a complete discussion of this evaluation process.

(3) Threat. Threat characteristics are used to determine the appropriate air defense system(s) to defend the specific asset. Enemy location and strength, type of enemy aircraft and ordnance, past enemy attack characteristics, and enemy doctrine are considered.

(4) Tactical and Technical Requirements. The capabilities and limitations of each of the MAGTF's air defense systems must be considered. Included are—

(a) Aircraft. Aircraft employed in an active air defense role must be maneuverable. For this reason, these aircraft will normally only be armed with air-to-air missiles, giving them little or no value in an offensive air support (OAS) role. Aircraft can be *dual-armed*, carrying both air-to-air and air-to-ground ordnance. However, the extra weight of bombs and rockets greatly reduces the maneuverability of the aircraft and thus gives the aircraft marginal utility in an air defense role. These trade-offs must be considered. Despite the limitations imposed by mixing missions (and ordnance), such

configurations are a compromise that may make sense for a helicopterborne operation. Assigning aircraft to a combat air patrol (CAP) role is costly; it takes an entire squadron of aircraft to man an around-the-clock two-plane CAP station.

(b) Surface-To-Air Missile (SAM) Systems. As mentioned previously, the Hawk system provides the MAGTF with an all-weather, around-the-clock, low-to-medium altitude air defense capability. The Stinger's night-time engagement capabilities are marginal without night vision devices. Poor weather and limited visibility also limit Stinger's usefulness. The Stinger can be employed almost immediately after arriving on scene, but it has limited range.

(c) Terrain/Radar Masking. Terrain limits Hawk capabilities by causing radar masking. Irregularities in the terrain, such as mountains and depressions, are compounded by the earth's curvature and create areas in which aircraft can fly undetected. The closer a hill, mountain, or tree line is to a Hawk radar, the greater will be the masked area. Hawk fire units should be located to minimize radar masking, while reducing signature problems (smoke, electronic, visual) as much as possible. Stinger units can be positioned to cover dead spaces created by masking of Hawk radars.

(d) Terrain and Weather. Terrain and weather impact both upon the enemy and upon the effectiveness of the MAGTF's air defense weapons. The terrain for Hawk firing units must be level and firm with adequate drainage. It must be fairly level (no more than 10° slope) to facilitate equipment movement, positioning, and emplacement. It must be firm enough to support the heavier pieces of Hawk equipment (up to 10,000 lbs.). Physical or map reconnaissance will be required to locate appropriate Hawk sites.

The topographic platoon of the intelligence company of the MAGTF's surveillance, reconnaissance, and intelligence group (SRIG) can provide invaluable mapping, charting, and geodetic (MC&G) and terrain analysis products and services which can be used to aid in the site selection process.

Firing positions for Stinger teams must offer good observation and fields of fire, provide the teams with security from ground attack, offer good line-of-site communications with their section leaders, and be free of backblast obstructions which could injure the gunner or nearby personnel when missiles are fired. Poor visibility (smoke, fog, etc.) adversely effect the Stinger gunner's visual acquisition capabilities and may also reduce the infrared signature of the target.

(e) Ease of Access. A Hawk unit requires substantial support in the areas of maintenance, repair parts, fuel, and general supplies. Either roads or suitable helicopter landing sites must be located in close proximity to Hawk sites. Firing positions (primary and alternate) selected for a Stinger team should give them ready access to their organic vehicle. Stinger teams require good mobility to ensure their survivability, especially after conducting an engagement. When fired, the Stinger's launch signature (backblast and exhaust trail) reveal the team's position. Therefore, the team must quickly move to an alternate position.

(f) Area. An area about 200 meters by 400 meters is required for a full Hawk battery to emplace its equipment. Additional area is required for dispersing vehicles, for support elements, and for missile storage and assembly areas. The Hawk CFU requires an area about 100 meters by 100 meters.

(g) Site Security. Hawk units are often lightly manned, particularly those task-organized to provide a highly mobile air defense capability such as the CFU. Hawk units will normally require assistance with local ground security. Commanders with authority over the positioning of Hawk units should consider this when selecting

firing positions. Positioning Hawk units close to other fairly secure assets, such as artillery units, may be desirable.

(h) Equipment Preparation Time. Hawk is a highly mobile system that needs to move at least every 8 to 12 hours for survivability or more often as the tactical situation dictates. However, each time the unit moves, the system is out of action. Road (or helo lift) movement time (a function of distance) and the time required to march order and emplace the system must be taken into account. For larger Hawk firing units such as a battery, the effects of this limitation can be reduced by moving the battery in platoon echelon. One platoon continues its AAW mission while the other platoon moves. Two or more CFUs can also perform echelon movement.

(i) Hawk Launcher Reloading Time. Launcher reloading is a time-consuming process dependant on many factors. If missiles must be decanned and winged, times typically run from 25 to 45 minutes to reload a Hawk launcher with 3 missiles. If missiles are already assembled on pallets, a Hawk launcher can be reloaded in around 10 minutes. The Hawk loader-transporter (a small, helo-transportable tracked vehicle) is used to move missiles from pallets to empty launchers. Reloading operations must be planned to avoid backblast from other launchers (61 meters).

(j) Lift Requirements. Most Hawk end items weigh between 5,000 and 10,000 pounds. If Hawk units cannot be moved overland to sites capable of supporting the helicopterborne operation, priorities must be established for heavy lift helicopter assets; i.e., artillery support, AAW, etc. In addition, if a Hawk unit is to be emplaced by helo lift without vehicle support (either trucks or rough terrain forklifts), it will be necessary for the helicopters to place the unit's equipment as close to their desired emplacement locations as possible. The weight of the equipment, soil conditions and the number of personnel available on the ground may limit the ability to *muscle* the equipment into position after it is unhooked from the helos.

(k) C^2 Requirements. AAW assets, including fighter aircraft and ground-based air defense systems, serve the MAGTF best when they are part of an IADS. Experience has shown that the key requirements for the C^2 of many widely-dispersed, highly-mobile air defense units under an IADS are centralized command (by the ACE commander through the Marine air command and control system [MACCS]); decentralized control (down to the lowest possible echelon); and reliable and effective communications.

5506. Designing an Air Defense

There are 5 basic steps used to design a point defense for an area like an LZ. These steps are depicted in figure 5-2.

Step 1. Define the Defended Area. In the case of a helicopterborne operation, the initial area to be defended is defined by the borders of the LZ(s) increased by the radius of effect of the most likely weapons the enemy may use.

Step 2. Determine Vital Points Within the Defended Area. Within a fairly large point defense like an LZ, certain assets will probably be of higher priority than others. The commander may be able to accept limited amounts of damage in some parts of the defense and unable to accept any damage in others. In these cases, coverage should favor the high-priority assets.

Step 3. Determine Routes of Approach. Route of approach fall into two general categories, probable and forced. A probable route of approach is one that the enemy is likely to use but is not restricted to use. The pilot of an aircraft traveling at 500 knots 150 meters above the ground can see little detail on the ground. He can, however, see large objects such as highways, rivers, and mountain ranges and may use them to assist in navigation. If such landmarks lead to a critical asset, they may be considered as in or near a probable route of approach. A forced route of approach is one that the attacker is compelled to use.

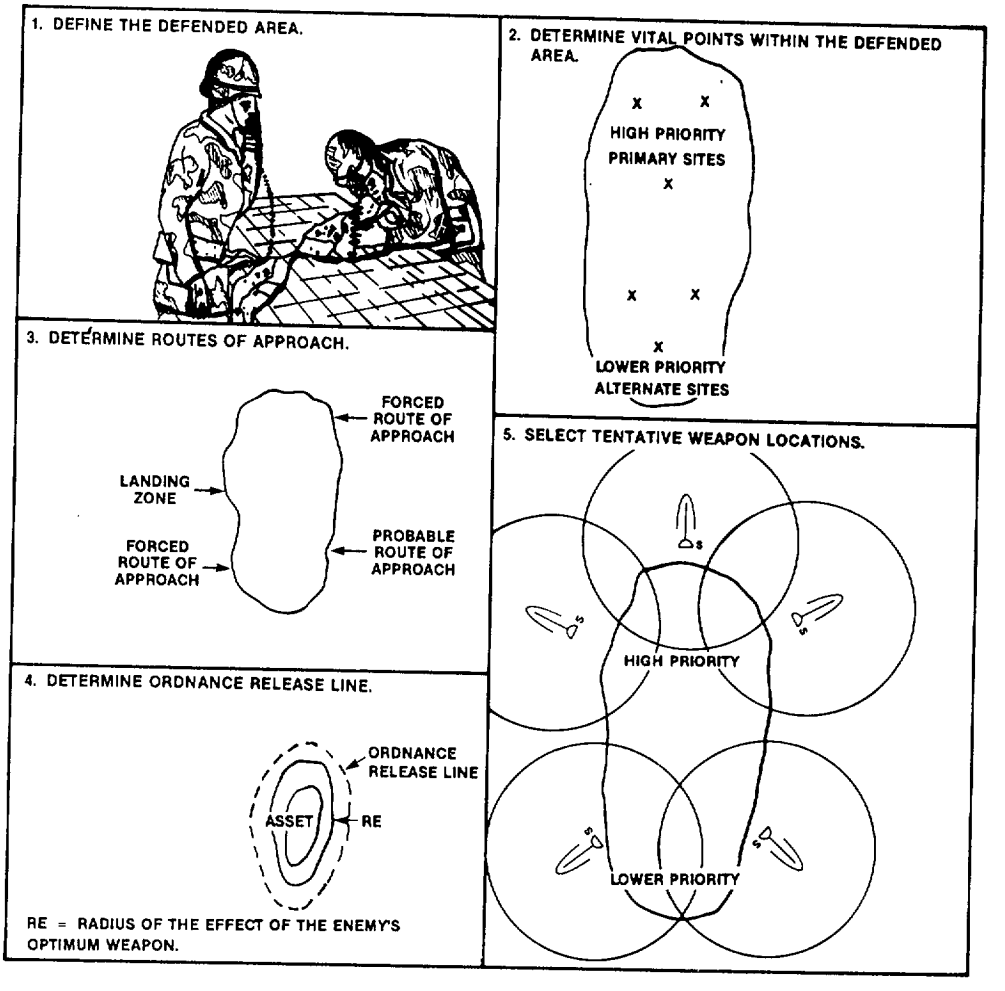

Figure 5-2. Air Defense Design Steps.

Step 4. Determine Ordnance Release Line. A thorough knowledge of enemy capabilities and techniques is essential when planning an air defense. In most cases, damage to an asset can result from an indirect hit within the radius of effect of the weapon the enemy chose to use. Additionally, an enemy pilot may release his ordnance at a distance from the asset and not directly above it. The bomb or ordnance release line will vary with the type of ordnance, aircraft, and attack used. For planning purposes, 1.5 km is a good figure to use for low-altitude, pop-up attacks. If a pilot desires to attack an area rather than a point, he may release his ordnance up to 10 km from the target. Considering these factors, it then becomes the objective of the air defense planner to organize a defense that ensures engagement of the target prior to the point at which ordnance can be released and have an effect on the defended area.

Step 5. Select Tentative Weapon Locations. The defense planner next selects tentative weapon locations. If these locations are based only on a map reconnaissance, adjustments from planned locations will probably have to be made when the units actually arrive in the LZ. The supported force commander needs to be kept abreast of any changes to planned locations.

5507. Phasing Air Defense Into an LZ

Phasing air defense weapons into an LZ is not unlike phasing air defense weapons ashore during an amphibious operation. As an example, let us look at the regimental lift we previously illustrated. In this example, the ACE commander has been tasked with extending the IADS to provide coverage for the helicopterborne operation.

a. Preparation of the LZs. Initially, the LZs and the areas around them will be prepped with artillery and air strikes. Additionally, the MAGTF commander has designated a light armor infantry (LAI) company with an attached Stinger section to provide screening of the LZs against both ground and low-level air attacks. A basic guideline for air defense operations is that Stinger units must be able to keep up with the units they support. Their organic high mobility multipurpose wheeled vehicles HMMWVs normally give them sufficient mobility to keep up with most maneuvering forces. In this instance, however, the terrain prevents the HMMWVs from keeping up with the LAI company's LAVs. Therefore, the Stinger teams will have to be placed in the LAVs.

When warning of an air attack is received, Stinger teams either conduct engagements from hatch spaces (if safety considerations permit) or dismount from the vehicles and occupy the best firing positions available. The introduction of the LAV/AD into the Marine Corps' inventory will address these problems by giving Stinger units a *shoot-on-the-move* capability with mobility and armament equal to or greater than most units they will support. The Stinger section leader will remain attached to the LAI company commander until additional elements of the MAGTF's IADS are established in the area. These elements will remain in the area until they can effectively communicate with the Stinger section and integrate the section's weapons back into the IADS.

b. Movement to the LZs. During the movement of the helicopterborne force to the LZs, air defense coverage will be provided by the existing IADS while the helo force is behind the FEBA. Attack helos and AV-8s, armed with both air-to-air and air-to-ground ordnance will escort the helicopterborne force. Before the helo force breaks out of the existing SAM coverage, the ACE launches radar-equipped fighter aircraft to man CAP stations which extend air defense coverage over the LZs.

c. Arrival in the LZs. A Stinger section will accompany the initial wave into each of the LZs. Once the Stinger sections are on the ground, the teams move to preplanned firing positions around the LZs. The section leaders establish communications with their teams and with their platoon commander who has established his CP at a Hawk site just behind the FEBA. The platoon commander has several sources of air defense information. He can collect air defense information from the Hawk unit he is collocated with and from the Stinger battery commander who has established his battery's CP in the vicinity of the tactical air operations center (TAOC). The TAOC is the MACCS agency responsible for the conduct of AAW operations. The section leaders use the target information received from their platoon commander, plus the information available from their own LEWDDs, to alert and cue their firing teams.

As additional troops and equipment arrive in the LZs and the tempo of ground operations escalates, the section leaders select firing positions for their teams in accordance with the ground commander's air defense priorities and his scheme of maneuver. They choose positions which provide balanced fires, mutual support, weighted coverage, early engagement, overlapping fires, and defense in depth to the maximum extent possible. To reduce the heavy lift helicopter requirement, the ACE commander chose to deploy only the section leaders' HMMWVs. This gives the section leader the ability to carry his LEWDD and some extra Stinger missiles for his teams.

Employing Stinger teams without their HMMWVs should be the exception rather than the rule. The teams depend on these vehicles to give them the mobility they need to support a rapidly changing tactical situation, the ability to carry a sufficient load of readily available Stinger missiles, and the ability to quickly displace to alternate firing positions after conducting an engagement to aid in their survival. When teams are employed without their HMMWVs, the unit they are supporting must be prepared to help the teams carry a sufficient number of extra missiles.

As ground operations expand out from the LZ, preplanned Hawk CFU sites are secured near each of

the LZs. One of the CFUs is helo-lifted into position, quickly orients and aligns its equipment, and is ready to fire within minutes. With the Hawk coverage now in place, the previously deployed CAP aircraft are ordered to return to the airfield to be refueled and rearmed for OAS missions in support of the regiment's ground combat operations. Under the air defense umbrella established by the Hawk and Stinger units already on site, the second CFU is helo-lifted into position. Within minutes, it too is fully operational. Each of the CFUs is equipped with a datalink to the TAOC, as well as HF voice radio communications. The CFUs also broadcast digital air picture information through the Stinger section leaders to the Stinger teams using their man-portable laptop computers. Figure 5-3 shows a vertical slice of the battlefield around one of the LZs which illustrates the air coverage provided by the various air defense systems in and around the LZ.

5508. Using Helicopters to Support Air Defense Operations

In addition to supporting helicopterborne operations, Hawk and Stinger units can use helicopters to occupy firing positions which would normally not be accessible by wheeled or tracked vehicles. Using helicopters, SAM units can easily cross terrain obstacles and rapidly bypass hostile areas. In addition to the standard methods of employing helicopters, the use of rappelling, fastrope, and special patrol insertion and extraction (SPIE) techniques can greatly enhance a Stinger unit's ability to provide effective air defense for supported units. Using these techniques, Stinger teams can be quickly deployed to sites on hilltops and other terrain features which lack adequate areas for helicopter LZs. These sites can give Stinger teams increased surveillance and overwatch capabilities, allowing them to detect and engage hostile aircraft at the maximum range of the Stinger system.

Consideration must be given to the mobility restrictions placed on SAM units when they are positioned using helicopters. Because both the Stinger and Hawk launch signatures are highly visible, the firing positions from which the missiles are launched can be easily located by the enemy. After firing, SAM units located in particularly vulnerable positions must quickly displace to alternate firing positions. Without their organic vehicles, SAM units are extremely susceptible to enemy counterattacks. Obviously, Hawk units have a greater problem if they are employed without their prime movers. Detailed redeployment planning for SAM units must be done before they are placed in remote sites.

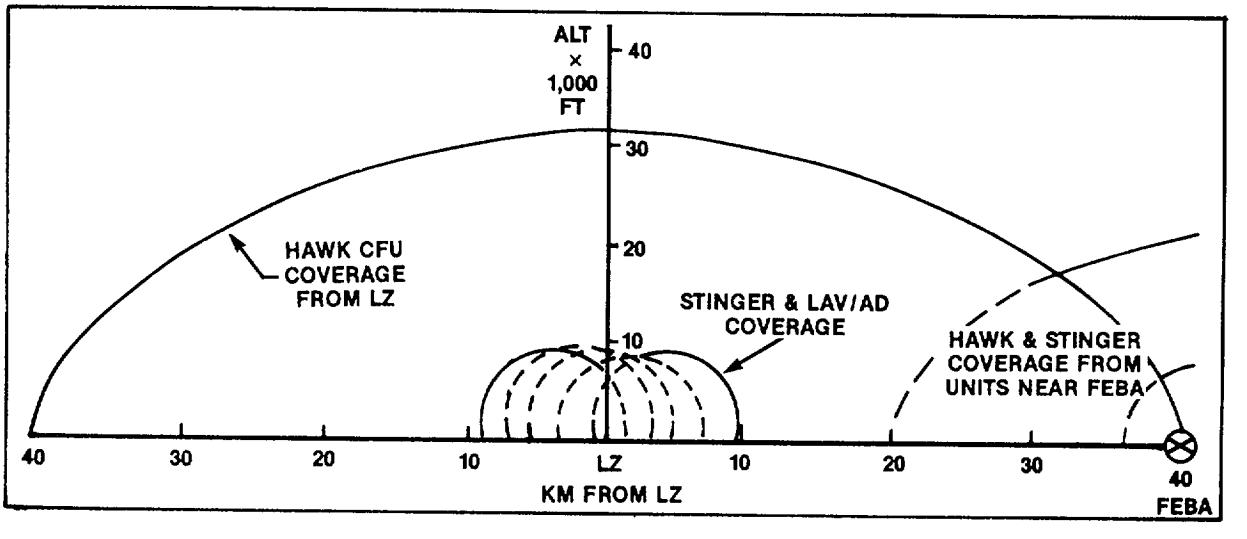

Figure 5-3. Air Defense Coverage Around LZ.

Chapter 6

Combat Service Support

CSS for helicopterborne operations must be planned, organized, and executed to support a rapid tempo in highly mobile and widely dispersed operations. The helicopterborne CSS planner must recognize the nature of helicopterborne operations from the outset and be prepared to adapt and innovate with the resources at hand. Just as the helicopterborne unit is tailored for movement by air, CSS must be tailored to sustain the helicopterborne unit by air. The organization through which CSS is provided for a helicopterborne operation is the HST.

Section I. Helicopter Support Team

6101. General

The helicopterborne unit is supported by organic, attached, and external CSSEs organized to push forces, supplies, material, and ammunition forward by air. The primary CSS organization within the helicopterborne unit is the HST. The HST is a task organization formed and equipped for employment in a landing zone to facilitate the landing and movement of helicopterborne troops, equipment and supplies, and to evacuate selected casualties and prisoners of war. (Joint Pub 1-02)

a. Mission. The HST provides support in helicopterborne operations by facilitating the landing and movement of helicopterborne forces, equipment, and supplies to and within the LZ and PZ.

b. Tasks. The HST performs tasks within a PZ or LZ similar to those performed by the shore party team/group in the beach support area (BSA). *The functioning of the HST is the responsibility of the helicopterborne unit commander.* An HST is expected to accomplish the following tasks:

- Prepare, maintain, and mark landing sites, remove or mark obstacles, and set up wind direction indicators.
- Establish and maintain required communications to include communications with supporting helicopters and supporting CSS units.
- Reconnoiter and select areas adjacent to landing sites for supply dumps and other CSS installations, HST command posts, casualty evacuation stations, and defensive positions.
- Provide LZ security.
- Direct and control helicopter operations within the LZ and support helicopter units landing in the zone.
- Unload helicopters to include external lifts.
- Load cargo nets, pallets, and casualties onboard for the return trip.
- Establish dumps, issue supplies to units and maintain necessary records of supplies received, issued, and available.
- Provide personnel and vehicle ground control.

- Maintain a situation map and information center.
- Provide emergency helicopter repair and refueling, if required.
- Evacuate POWs.
- Perform fire-fighting duties in the LZ.

6102. Responsibilities Associated With HST Operations

An HST is task-organized to provide responsive support to a helicopterborne force. To complete its mission, the HST performs many diverse tasks in HST operations which are normally performed by different organizations within the MAGTF. The MAGTF contributes to the mission of HST operations by providing personnel and equipment. The MAGTF organizations and the normal responsibilities of those organizations that support the HST are as follows:

- **Helicopterborne Unit.** Provide overall C^2 of the HST and integrate HST operations into the tactical order.
- **MAGTF Command Element.** Provide the required direction and support to the helicopterborne unit.
- **Surveillance, Reconnaissance, and Intelligence Group.** Provide the intelligence necessary to plan the lift and to conduct a reconnaissance of the proposed LZ.
- **Aviation Combat Element.** Provide the aircraft/air crews, air control, and other support elements that are required by the mission.
- **Ground Combat Element.** Provide attachments, detachments, and fire support as necessary to support the helicopterborne unit.
- **Combat Service Support Element.** Provide attachments and detachments to the helicopterborne unit as necessary to ensure all CSS requirements beyond the organic capability of the helicopterborne unit are met.

6103. HST Organization

The HST is a task organization composed of personnel and equipment of the helicopterborne force and the supporting aviation unit, with augmentation from other units as required. The HST organization is determined by the contemplated operation. Normally, the HST is employed in each PZ and LZ to provide support to units operating in and around those zones. The HST normally consists of an advance party, headquarters, helicopter control element (HCE), and LZ platoon. The elements and their functions are as follows:

a. Advance Party. The advance party contains personnel from all elements of the HST. The advance party contains personnel for command, reconnaissance, communications, and LZ control. It numbers about 8 to 10 men with hand-carried equipment.

The officer in charge (OIC) of the advance party makes contact with the senior Marine of the reconnaissance unit who provided the initial helicopter terminal guidance and receives a briefing of the LZ and adjacent areas. The OIC of the advance party assumes operational control over the reconnaissance unit and retains this control until the HCE of the HST assumes responsibility for the helicopter control activities. Advance party personnel reconnoiter positions for the various landing sites and points to be located within the LZ. Communications personnel establish communications with the HST commander (or helicopterborne unit tactical-logistical group [TACLOG] during amphibious operations) within the LZ, as well as communications with the helicopter unit and the helicopterborne force CP. LZ control personnel control the helicopters operating within the LZ. When the HST is established in the LZ, the advance party disbands and its personnel revert to their parent element within the HST.

b. Helicopter Support Team Headquarters. The headquarters element may be provided from the service platoon of the helicopterborne unit when no CSS buildup is planned or the landing support platoon, landing support company if a CSS buildup is planned. *Providing landing support personnel to the helicopterborne unit to form the HST headquarters when a CSS buildup is planned facilitates the transfer of control of the LZ to the CSS unit when the CSS buildup commences.* The HST headquarters consists of—

- A command section provided by the appropriate platoon headquarters, augmented as required.
- A communications section provided by the communications platoon of the helicopterborne unit or the communications platoon, headquarters and service company, landing support battalion as appropriate.
- A military police section consisting of personnel from the Military Police Company, Division Headquarters Battalion or Headquarters and Service Battalion, FSSG as appropriate.
- A security section provides for internal security of the LZ. The security section is provided by the helicopterborne unit.
- An evacuation section provided by the medical section of the helicopterborne unit.
- An HST liaison section normally accompanies the headquarters element of the helicopterborne unit.

c. Helicopter Control Element. Personnel for the HCE are provided by the MAW. The HCE is task-organized with personnel and equipment from the Marine air traffic control squadron (MATCS), the Marine wing communication squadron (MWCS) of the Marine air control group (MACG), and aircraft maintenance personnel from the helicopter squadron making the lift. Crash, fire, and rescue personnel with portable equipment from a rotary wing Marine wing support squadron (MWSS[RW]) of the Marine wing support group (MWSG) are included in the HCE. If helicopter refueling is required in the landing zone, fuel team personnel and equipment from a MWSS (RW) are also included in the HCE. The HCE is generally organized into three sections; air traffic control, communications, and helicopter maintenance and refueling sections. The control element establishes and operates electronic and visual NAVAIDs to guide aircraft, and it directs and controls helicopter operations within the LZ.

d. Landing Zone Platoon. The LZ platoon is provided by the same unit that provides the HST command section. The LZ platoon is organized into command, supply, and equipment sections. If material handling equipment (MHE) is required in the LZ or if helicopter slings and related equipment are required for external lifts (they normally are), the landing support unit will provide this type of equipment because this equipment is not organic to combat units. This remains true whether or not a CSS buildup is planned.

6104. Landing Support Battalion

The landing support battalion is a CSS unit with a unique role. It facilitates the distribution of critical, high volume, consumable supplies throughout the MAGTF. These supplies are heavy and large and, therefore, present a difficult challenge even in normal operations. In helicopterborne operations, the difficulty of distributing these supplies is magnified.

Landing support units are present in all task-organized MAGTF CSS organizations. During amphibious operations, landing support personnel play a major role in the planning and execution of landing force support party operations. In MEF, MEB, and MEU operations, landing support personnel play a key role in the FSSG, brigade service support group (BSSG), and MSSG. In helicopterborne operations, landing support personnel are a critical part of the HST and follow-on CSSDs which support the helicopterborne force.

a. Equipment. The landing support battalion is the unit which contains the majority of the MAGTF's tactical MHE. By centralizing MHE, the MAGTF commander ensures that sufficient MHE can be quickly massed at the point of main effort; a capability which would not exist if MHE were permanently distributed among all MAGTF units. This same concept holds true for helicopter slings, cargo nets, and other specialized equipment used during helicopterborne operations. Centralization also ensures that there are dedicated personnel that keep this equipment in ready for use condition. Centralization can also be used as an economy of force. For example, the landing support battalion is responsible for providing MHE and specialized

equipment to helicopterborne units regardless of whether or not a CSS buildup is planned for a helicopterborne operation.

b. Training. When operational opportunities require the employment of helicopterborne units, landing support services, *particularly HST services*, are vital to the success of the operation. However, there are not sufficient landing support personnel within the MAGTF to perform all required HST tasks for operational success in a possible large operation. To develop and maintain the MAGTF's helicopterborne capability, landing support units provide training to combat and CS units so that helicopter support operations, particularly external lifts, can be accomplished by those units without the requirement for a large number of landing support personnel. For example, the helicopter movement of howitzers and/or LAVs by external lift, which are manpower intensive evolutions, is accomplished by artillery and LAI units respectively. The training of MAGTF units by landing support units enhances the capability to exploit the inherent mobility of the MAGTF. All combat and CS units must be trained and capable of moving their internal vehicles, equipment, and supplies without augmentation from the landing support battalion.

c. Employment. The criteria for employing landing support units and helicopterborne unit personnel to provide HST services in helicopterborne operations must be understood. These criteria are not intended to limit landing support involvement but to facilitate the most efficient use of trained HST personnel. The number of landing support personnel within a MAGTF is relatively small when compared to the tasks they must perform. On the other hand, the number of organic personnel within combat or CS units available is also limited when requested to perform HST tasks without effecting the unit's primary mission. If it is determined that a helicopterborne unit lacks sufficient organic personnel to perform all of the required HST tasks, landing support augmentation should be requested; even if a logistic buildup is not planned. There are not sufficient personnel organic to helicopterborne units or in landing support units to support a large helicopterborne operation if each is employed by itself. If maximum utilization of the organic capability of the helicopterborne unit is made before requesting landing support augmentation, the HST requirements for a large helicopterborne operation can be met. Combat and CS units must be capable of moving their vehicles, equipment, and supplies without augmentation from the landing support battalion.

Section II. Planning CSS for Helicopterborne Operations

6201. Key Points of Helicopterborne Operations Prior to Planning

Before effectively planning CSS for helicopterborne operations, commanders and CSS personnel should concern themselves with the characteristics of helicopterborne operations. Based on the knowledge of this concept, they will be able to implement CSS with the flexibility and prompt response time required to meet the mission of helicopterborne operations. There are key points and specific points about helicopterborne operations which must be understood before any detailed discussion of CSS can commence.

a. Key Points. The key points about helicopterborne operations that must be understood by the CSS planner are as follows:

(1) Helicopterborne operations are inherently complex evolutions requiring detailed integration of all MAGTF capabilities; aviation, ground, and CSS. Detailed planning and preparations are always required for success. Ad-hoc, seat of the pants planning can lead to disaster.

(2) To be effective, helicopterborne operations must be planned and executed rapidly to exploit transient enemy vulnerabilities which present themselves. The enemy will recognize these vulnerabilities at the same time or before the MAGTF does and will initiate corrective action. The MAGTF must be able to act to exploit these vulnerabilities before the enemy can take corrective action.

(3) The requirements for detailed planning and preparation and the capability to plan and execute helicopterborne operations rapidly and efficiently are not contradictions. MAGTF organizations must be trained, must be mentally prepared, and have SOPs in place in anticipation of the opportunity to exploit an enemy vulnerability. When the vulnerability occurs and the opportunity presents itself, the MAGTF must be capable of timely action.

(4) Accurate and timely intelligence is critical. Placing a helicopterborne force in the wrong place at the wrong time can be costly in personnel, equipment, and lost opportunities.

b. Specific Points. The specific points that need to be understood by the CSS planner are as follows:

(1) To ensure unity of effort during a helicopterborne operation, all MAGTF units who will move to and remain in the objective area are initially attached to the helicopterborne unit. The operation order of the higher headquarters who initiated the helicopterborne operation will specify when or under what conditions control of units attached to the helicopterborne unit will pass back to their parent organizations.

(2) Confusion which disrupts the rapid buildup of combat power into the objective area can prove to be fatal. One way to avoid confusion is to form an HST for all tactical helicopterborne operations to ensure a rapid, organized, and efficient buildup of balanced combat power in the objective area.

(3) HST operations in support of a helicopterborne operation is the responsibility of the HUC. The HUC receives support and augmentation from other MAGTF organizations to form his HST but the responsibility for the execution of all HST tasks remains with him.

(4) The helicopter terminal guidance for the initial assault waves is normally provided by personnel of the division or force reconnaissance units. Initial terminal guidance is especially critical for night helicopterborne operations. Once established in the LZ, the HST assumes responsibility for helicopter terminal guidance and reconnaissance personnel are assigned follow-on missions by the HUC or higher headquarters, as appropriate.

(5) HST operations are normally terminated when the helicopterborne unit is no longer dependent on helicopter support as the primary means of CSS support or when a planned CSS buildup commences in the LZ.

(6) The helicopterborne unit and units which provide attachments to the helicopterborne units are responsible for preparing, rigging (attaching slings), and hooking up (to helicopters) their organic equipment and supplies for external helicopter lift. This capability is acquired and maintained through training.

(7) Within the MAGTF, slings and cargo nets used for external helicopter lifts are centrally controlled and managed by the landing support unit. Landing support units provide training assistance in LZ operations to include external lifts to MAGTF units.

(8) The role of landing support battalion units in support of the HUC varies depending on the mission of the helicopterborne unit. The landing support unit may be tasked by the HUC with complete responsibility for the organization and functioning of PZs and LZs or the assigned tasks may be limited to providing material handling equipment and personnel and providing and controlling slings for external lifts when required.

(9) Understanding the difference between a CSS buildup and a basic load is another specific point in understanding the role of CSS in helicopterborne operations. The basic load and the resupply of the basic load is not considered a CSS buildup. The unit brings in the basic load with them and when the basic load is depleted it is resupplied by its own unit. A CSS buildup takes place when additional supplies, above and beyond the basic load, is moved to the objective area.

6202. Planning Considerations

a. The exact organization and disposition of CSSEs is a function of the helicopterborne unit's mission and anticipated follow-on operations. It is imperative that the helicopterborne unit and supporting CSS unit coordinate closely during the planning of helicopterborne operations from the initial stages onward. Concurrent planning ensures that all requirements and constraints of CSS are considered. It also provides the lead time necessary to organize and position those CSS resources required to support the operation. The HST is an essential link between the operational scheme and the CSS plan. Close and continuous coordination between the helicopterborne unit and the supporting CSS unit ensures adequate CSS throughout the operation.

b. To organize CSS for helicopterborne operations, the CSS planner must consider the following:

- The helicopterborne unit's mission and the concept and duration of the operation.
- The task organization to include densities of personnel, weapon systems by type, equipment by type, and aircraft by type.
- Is a CSS buildup planned?
- Enemy situation, weather, and terrain.
- Helicopter availability and the distances between supporting and supported units.
- Ammunition and aviation fuel consumption rates.

c. CSS planning must ensure that CSS is provided, not only for the organic and attached elements of the helicopterborne unit, but also for units providing DS and GS. The helicopterborne unit is responsible for planning CSS for its organic and attached units. The higher headquarters who initiates the helicopterborne operation is responsible for coordinating CSS planning of units providing DS and GS to the operation with the CSS planning of the helicopterborne unit. This planning must expressly designate who will provide CSS to all participating units throughout the helicopterborne operation. When an attachment joins the helicopterborne unit, the attachment should bring appropriate amounts of its own CSS assets from its parent unit. These assets are controlled by the HUC.

6203. Planned CSS Buildup

Understanding the meaning of a planned CSS buildup is another important point to understanding CSS in helicopterborne operations. In the following paragraphs, the difference between the basic load and the CSS buildup as they relate to helicopterborne operations will be discussed. The important concept to understand is that the basic load is what the unit carries with them to the objective area whereas the CSS buildup are additional supplies required beyond the basic load.

a. Basic Load. A helicopterborne unit, based on its mission, will move to the objective area by helicopter with the necessary personnel, equipment and a basic load of consumable supplies to accomplish the mission. The basic load of supplies carried by the helicopterborne unit is normally prescribed by the higher headquarters who assigns the mission to the helicopterborne unit. The terms *basic load* and *prescribed load* are used interchangeably.

The basic load for all classes on consumable supplies except ammunition (class V) is expressed in day(s) of supply (DOS). A DOS is that amount of supplies a unit requires to sustain itself in combat for one day. A DOS for food is three meals per individual; for water two canteens per individual per day but can be higher in hot climates; for fuel, the total fuel consumption of all equipment as specified in the table of authorized material. A DOS for other supplies such as sandbags, barbed wire, repair parts etc., is normally specified in the unit SOP.

The basic load for ammunition has two parts; a basic allowance (BA) and day(s) of ammunition (DOA). The BA is the quantity of ammunition (number of rounds) which the Marine Corps has specified to be maintained by a unit for each weapon that unit employs in combat. A DOA is the total of the standard consumption rates for each organic and attached weapon when employed in combat. A DOA is further specified into an assault rate and a sustained rate. The assault rate, which is a higher consumption than the sustained rate, is specified for units conducting offensive operations. The sustained rate is specified when a unit is not conducting offensive operations. An example of a unit basic load would be *one DOA assault rate, one DOA sustained rate, two DOS.* The BA is always a requirement so it is implied and normally not stated. In addition to the BA the unit in the example will carry a DOA calculated at the higher assault rate to cover the initial assault and another DOA calculated at the sustained rate. The unit will also carry sufficient consumable supplies to sustain itself in combat for two days without resupply. The basic load is issued to, controlled by, and carried by the helicopterborne unit to the objective area. The basic load is considered as helicopterborne unit organic supplies.

b. CSS Buildup. Movement of the helicopterborne unit's basic load to the objective area and resupply of the basic load to maintain the specified supply level is not considered a CSS buildup. A CSS buildup takes place when additional supplies, above and beyond the basic load is moved to the objective area. For example, if a supply safety level of one or two DOS/DOA is to be moved to the objective area, this constitutes a CSS buildup. When a CSS buildup in a LZ commences, the control of the LZ will transition from the helicopterborne unit HST to a designated CSS unit and the LZ is redesignated a landing zone support area (LZSA).

c. Ship-to-Shore Movement. When the helicopterborne operation is part of the ship-to-shore movement of an amphibious operation, the CSS unit which assumes control of the LZSA will be an element of the landing force support party (LFSP). During landing force operations ashore or subsequent operations ashore, the CSS unit who assumes control of the LZSA will be a CSSD from the CSSE of the MAGTF. The operation order of the higher headquarters who initiated the helicopterborne operation will specify when control of the LZ will pass from the HST of the helicopterborne unit to the supporting CSS unit. The passing of control can be specified by time, event, (i.e., when sufficient CSSE C^2 capability are in the LZ) or will take place on order of the higher headquarters.

Section III. Execution of Combat Service Support

6301. General

The helicopterborne force is normally configured to conduct the initial assault with one to three days of accompanying supplies (basic load) to ensure some degree of self-sustainment. When the enemy situation permits, resupply is accomplished by air on a routine basis to keep the basic load at the prescribed level.

6302. Helicopterborne Combat Service Support

a. Configuration. The CSS trains for all helicopterborne units must be organized, located, and controlled to facilitate the consolidation, packaging, and air movement of the basic load and sustainment of the basic load into support packages configured to unit size. As a guideline, the air movement of the battalion's logistical train will require the same quantity of helicopters needed to move a rifle company. The CSS train of a helicopterborne unit works in close coordination with the HST of that same helicopterborne unit but the HST and train are usually separate organizations. Command and support relationships can be established between the two organizations but since the HST is a temporary organization and the train is a permanent organization, keeping the two separate, promotes operational effectiveness. There are certain functions such as distribution of ammunition and other supplies in the LZ which are initially accomplished by the HST and will later be assumed by the trains. Thus, supply personnel organic to the helicopterborne units, that were initially assigned to the HST, will transfer to the train when the HST is disestablished.

b. Organization of CSS Trains. The organization of trains varies with the mission that is assigned to the helicopterborne unit. Trains may be centralized in one location (unit trains), or they may be echeloned in two or more locations (echeloned trains). In a helicopterborne operation, the train normally transitions between unit trains and echeloned trains.

(1) Prior to the commencement and during the initial stages of a helicopterborne operation, a unit train is employed in the vicinity of the PZ to prepare equipment and supplies for helicopter lift and to move these items to the PZ. The HST takes over responsibility for final preparation and further movement. The HST also is responsible for the initial distribution of supplies in LZs in the objective area.

(2) As elements of the helicopterborne unit in the objective area move away from the LZ, elements of the train are echeloned into the objective area. This forward echelon of the train assumes responsibility for receiving critical supplies contained in the unit's basic load from the HST and moving them to the elements of the helicopterborne unit which have moved away from the LZ. This echelon also provides maintenance contact teams and medical support in the objective area. The train will remain echeloned until such time that a CSS buildup commences, a CSSD from the MAGTF's CSSE assumes responsibility for operation of the LZ, or the HST is disestablished.

(3) *If a CSS buildup commences, the responsibility for flowing of supplies to and the issuing of supplies from the landing zone becomes the responsibility of the MAGTF CSSE.* The entire helicopterborne train can be moved to the objective area again where it will form a unit train.

(4) As operations continue in the objective area, the commander may elect to echelon his trains when he feels that CSS must be collocated with maneuver units to provide immediate, dedicated support.

c. Essential Support Elements. The commander normally moves only essential support elements to the helicopterborne objective area.

6303. Supply

a. Frequent Replenishment Requirements. The intensive nature of helicopterborne operations and the comparatively small load capacities of helicopters produce a requirement for frequent (as opposed to a few massive) replenishment of the ground and air elements involved. To meet this requirement, it is necessary to have a comprehensive logistical plan.

b. Staging and Movement of Supplies. Supplies going forward from logistical trains must be staged and moved using methods that reduce loading and unloading times. Palletized or external sling loads reduce the ground-time and aircraft vulnerability because they can be unloaded quickly.

c. Logistical Equipment and Personnel. When preparing the loads, the equipment and personnel capabilities of the anticipated configurations of loads must be considered in task-organizing the HST. Simply stated, make sure the HST can do the job.

d. Allocation of Logistical Resources. The logistic plan must maintain a balance in the allocation of resources between the GCE and the ACE. This is particularly significant if FARPs are employed. (See par. 6502.)

e. Examination of Surface Means. Examination of surface means for resupply whenever air movement is not essential to the achievement of the operational aim is important. Again, this is particularly significant if FARPs are employed.

6304. Maintenance

Maintenance involves inspecting, testing, servicing, repairing, requisitioning, rebuilding, recovering, and evacuating equipment. The assault echelon is not normally accompanied by maintenance personnel. During helicopterborne operations, repair above the operator level is accomplished in one of two ways:

a. Contact teams organic to the helicopterborne unit or maintenance support teams from the supporting CSSD may be flown forward to effect immediate repair of critical equipment.

b. Deadlined and/or damaged equipment may be evacuated by air.

6305. Field and Personnel Support Services

These services are an important part of the overall support effort and continue during helicopterborne assault operations; however, these services are never a part of a helicopterborne assault operation. Rather, they are normally accomplished in a rear area outside the helicopterborne objective area.

6306. Medical Support

Medical support is provided by the medical officer and the medical section of the helicopterborne unit. medical support is planned and addressed in the administrative and logistics annex to the operation order. Medical planning should include—

- Location of unit aid stations in the objective area.
- Ground and air evacuation plans and/or routes.
- Location of CSSE medical facilities.
- Location of designated casualty receiving ships or stations.
- Procedures for requesting helicopter medical evacuation to include communications instructions.

To adequately support the mission, the medical officer and his chief assistant should be included in all operational and/or tactical briefings.

a. Medical Evacuation. The primary means for helicopterborne operations medical evacuation is the helicopter. Helicopter medical evacuation of casualties is accomplished by helicopters leaving the LZ and returning to the rear area. Inflight medical care is essential for those casualties whose condition is serious and must be planned for. If sufficient helicopters are available, one or more helicopters may be designated as medical evacuation helicopters for the more serious casualties who require inflight medical treatment. The inflight medical treatment personnel are normally provided by the ACE. If required, augmentation of ACE in flight medical treatment personnel can be requested from the CSSE. All casualties evacuated by helicopter are delivered to CSSE medical treatment facilities or designated casualty receiving ships if available.

b. Helicopter Medical Evacuation Control and Coordination Procedures. Procedures related to medical evacuation are contained in both the air and the administration/logistics annexes of the operation order. The administration and logistics annex contains the medical criteria for requesting a helicopter evacuation. The air annex contains the aviation related aspects such as communication channels to request and control the helicopter once it enters the unit area of responsibility as well as the procedures used. Normally a unit will establish an SOP which contains both the medical and aviation aspects of helicopter medical evacuation and their SOP is referenced in both annexes.

The helicopterborne unit will establish its unit and station near the LZ as soon as possible. During the initial stages of the operation when maneuver units are in close proximity to the LZ, all casualties are moved to the unit aid station. Here, minor wounds are treated and the personnel returned to duty. The more seriously wounded are moved to the LZ where the HST will evacuate them by the next available helicopter returning to the rear. Those casualties requiring inflight medical attention are held at the aid station until a helicopter with medical personnel is inbound to the LZ. As maneuver units move further away from the LZ, it may become necessary to evacuate the more seriously wounded directly from the maneuver unit if it is possible to land a helicopter near that unit or hoist the casualty into the helicopter if it cannot land. The less serious casualties are still moved to the aid station for treatment.

The helicopterborne unit, when necessary, requests helicopter medical evacuation from the ACE's DASC using the tactical air request (TAR) net. The request is normally initiated at a battalion fire support coordination center (FSCC) who has received a request from the battalion aid station or a subordinate unit. A subordinate unit who is accompanied by a forward air controller (FAC) may make a request over the TAR net directly to the DASC. The battalion FSCC, who is monitoring the TAR net, may disapprove the request by interrupting the transmission and voicing disapproval. Otherwise, silence is consent.

The DASC may divert an airborne helicopter if available to perform the medical evacuation. If this is not possible, the DASC passes the request to the ACE's tactical air control center (TACC) who exercises launch authority. The helicopter, once airborne, will receive instructions from the DASC concerning the casualty, location of pickup, flight route, who to contact on what radio frequency, and the medical facility to which the casualty will be evacuated. DASC coordination with the GCE FSCC establishes a safe route through friendly fires for the helicopter.

The helicopter, when approaching the area where the helicopterborne unit is operating, contacts the FSCC of the requesting unit and receives final instructions. In cases where the casualty pickup will be made at a forward unit, the FSCC instructs the helicopter as to the radio frequency on which to contact that unit and informs the unit of the time of the helicopter's arrival. The forward unit contacts the helicopter by radio and provides terminal guidance instructions and information on the friendly and enemy tactical situation.

When time permits, identification of the casualty is reported to the battalion S-1 over the battalion administrative and logistical net.

Section IV. Planning and Execution of Helicopter External Load Operations

6401. General

The planning and execution of external load operations, not requiring a CSS buildup, are the responsibility of the HUC, even when the HST is provided by landing support battalion. Transporting supplies and ready for use equipment by helicopter external (sling) load has the advantage of rapidly moving heavy, outsized, or urgently needed items directly to the using unit. The logistical planner can enhance the sustainment of the helicopterborne force by developing SOPs in advance for sling load operations. FMFRP 5-31, *Multi-Service Helicopter External Air Transport Procedures*, Volumes I, II and III, provides detailed information on rigging of equipment and supplies for external lift by helicopter.

6402. External Load Considerations

The following are considerations for external loading:

a. If cargo is too light or bulky, it will not *fly* properly when suspended under the aircraft at cruise airspeeds.

b. The external load must not exceed a helicopter's lift (under given atmospheric conditions) or hook capabilities. For general planning purposes, the following figures are provided: *5,000* pounds for the CH-46, *10,000* pounds for the CH-53D, *30,000* pounds for the CH-53E, and *2,000* pounds for the UH-1.

c. Airspeeds may be slower when helicopters carry external loads.

d. Dust, sand, or snow, which would be blown during hover for pickup or delivery of cargo, may preclude safe external load operations.

e. The higher altitudes, which may be flown with sling loads, may subject the aircraft to more ground fire.

f. Extended hovering to pick up or deliver a sling load during darkness is inherently more dangerous than similar daylight operations.

g. The availability of suitable slings, cargo nets, cargo bags, and other air delivery items may preclude or limit external load operations.

6403. Elements of an External Lift Mission

There are normally three different elements involved in an external lift mission: the PZ HST, the LZ HST, and the aviation unit. The responsibilities and functions of each are as follows:

a. The PZ HST is responsible for—

(1) Preparing and controlling the PZ.

(2) Repositioning all the equipment needed for external lift operations, including slings, A-22 bags, cargo nets, and containers.

(3) Storing, inspecting, and maintaining all external lift equipment.

(4) Providing a sufficient number of trained HST crews for rigging and inspecting all the loads, guiding the helicopters, hooking up the loads, and clearing the aircraft for departure.

(5) Securing and protecting sensitive items of supply and equipment.

(6) Providing load derigging and disposition instructions to the receiving unit.

(7) Providing disposition instructions to the receiving and aviation units for the slings, A-22 bags, cargo nets, and containers.

b. The LZ HST is responsible for—

(1) Preparing and controlling the LZ.

(2) Having trained HSTs available to guide the aircraft in and derig the load.

(3) Coordinating with the PZ HST for the control and return of the slings, A-22 bags or any other items that belong to the supported unit and returning them as soon as possible.

(4) Preparing, coordinating, and inspecting backloads, such as slings, A-22 bags, and so forth, and having them ready for hookup or loading.

c. The aviation unit is responsible for—

(1) Effecting and/or establishing coordination with the helicopterborne unit.

(2) Advising the helicopterborne unit on the limitations of the size and weight of the loads that may be rigged.

(3) Advising the helicopterborne unit on the suitability of the selected PZs and/or LZs.

(4) Providing assistance for the recovery and return to the PZ of the slings, A-22 bags, cargo nets, and containers as required by the supported unit.

(5) Establishing safety procedures that will ensure uniformity and understanding of duties and responsibilities between the ground crew and the flight crew.

Section V. Aviation Support Considerations

6501. General

Aviation units consume large amounts of fuel, ammunition, class IX, and maintenance support during intensive helicopterborne operations. Although aviation units are responsible for meeting their own unique logistical support requirements, the MAGTF planner must be aware of the requirements, plan for them, and be prepared to assist as necessary.

6502. Forward Arming and Refueling Points

FARPs are temporary facilities. They are organized, equipped, and deployed by the ACE commander. FARPs are positioned in or closer to the area of operation than the aviation unit's combat service area. The forward arming and refueling point permits combat aircraft to rapidly refuel and rearm simultaneously. FARPs are—

- Established in the vicinity of the supported ground unit, behind the FEBA or FLOT, and out of range of the majority of enemy artillery units.
- Positioned to reduce turnaround time, thus optimizing helicopter availability, and repositioned frequently to avoid detection and destruction.
- Fully mobile, using ground vehicles and helicopters.
- Capable of performing refueling and rearming operations rapidly and efficiently.
- Defended from enemy ground and air attack.
- Concealed from enemy observation.

6503. Aircraft Maintenance and Recovery

a. Maintenance. Aircraft have substantial maintenance requirements. However, maintenance is kept to a minimum in the operational area. A method used to accomplish this, and still have responsive maintenance, is to move aviation maintenance teams to aircraft requiring repair when the repair is beyond the capability of the aircraft crew. The ACE commander may assign aircraft maintenance teams to accompany the flight or position them in PZs and LZs.

b. Tactical Recovery of Aircraft and Personnel (TRAP). If an aircraft is forced to land on enemy terrain due to mechanical problems or combat damage, every effort is made to protect the aircraft and personnel until they can be evacuated. However, mission execution has priority over rescue and recovery operations. The ACE commander is notified immediately of any downed aircraft. He takes action in accordance with unit SOPs to secure and recover personnel and aircraft with resources or requests assistance from the MAGTF commander. The helicopterborne unit or other MAGTF unit may have to provide security for the recovery team. When an aircraft is downed, the senior occupant assumes command and establishes a defense of the area or organizes evasive action. If an aircraft is abandoned, steps are taken to destroy it to preclude its capture or the capture of sensitive equipment or documents. The level of authority required to destroy the aircraft is established in unit SOPs (it may be covered in the operation order). However, if capture is imminent, the aircraft, equipment, or documents should be destroyed.

Chapter 7

Conduct of a Helicopterborne Operation

Section I. Overview

The following sequence demonstrates the HTF movement from the assembly area to the PZ and on to the LZ. The helicopterborne operation, during subsequent operations ashore, normally begins at an assembly area. See section III for Helicopterborne Practical Exercise I: Example of a helicopterborne operation in a counterinsurgency situation and section IV for Helicopterborne Practical Exercise II: Illustration of the planning process involved in a linkup with a mechanized force.

7101. Movement From the Assembly Area to the Landing Zone

a. At the prescribed time, units move from the assembly area to the holding area, via a route designated by the HUC. A holding area must be—

- Covered and concealed.
- Sufficient size for the helicopterborne force.
- Close to primary and alternate PZs.

b. Each unit commander notifies the PZCO upon his unit's arrival in the holding area. In this area, unit leaders separate the unit into loads (sticks) according to the loading plan. Heavy loads and external loads should not be programmed in initial waves. Offloading heavy internal loads is time consuming and slows troop buildup. (See fig. 7-1.)

TIME (minutes)	ACTION
H-20	Air recon completed.[1]
H-20 to H-5	Close air strike.[2]
H-5 to H-2	Artillery preparation.
H-2 to H-hour	Artillery shifts fires; attack helicopter suppression.
H-hour	First wave lands.
H-hour to H+30	Attack helicopters.[3]
H-hour to H+120	Artillery.[4]

1 Conduct route reconnaissance from PZ to LZ. At H-20 move to alternate LZs and continue reconnaissance.
2 Artillery and close air may engage simultaneously if sufficient ammunition is available.
3 On station for targets of opportunity in the vicinity of the LZ.
4 On-call suppressive fires and counterbattery fires.

Figure 7-1. Notional Preparatory Fire Sequence.

c. Each load (stick) includes a designated heliteam leader. He is usually the senior Marine in the heliteam and is responsible for briefing his troops and inspecting the load. He ensures the load is organized and ready to be loaded as planned. The PZ control party briefing includes the loading point for primary and alternate PZs and the routes to those points. The heliteam leader briefs his heliteam members on the following information:

- Loading procedures.
- Bump plan (for individual and/or load bumps).

- Use of safety belts.
- Preflight safety inspection of Marines.
- Inflight procedures.
- Downed aircraft procedures.
- Offloading procedures.
- Movement from the LZ.
- Any other essential information.

7102. Procedures in the Pickup Zone

a. Organization of the Pickup Zone. To the maximum extent possible, the PZCO lays out the PZ as directed in the plan. For example, if the plan calls for landing to the west in a staggered trail formation with the lead aircraft landing on a spot marked by a smoke grenade, or panel markers, the PZ is laid out that way.

To minimize confusion during landing, aviation elements arrive at the PZ in the formation directed in the plan. Then, the PZCO, or HST personnel, assist in loading by ensuring helicopters and personnel are in the proper location and formation at the correct time. If an aircraft (scheduled for the lift) is unable to complete its mission due to mechanical failure, the PZCO informs the unit commander, who implements the bump plan.

b. Infantry Movement to Pickup Zone. The PZCO coordinates the arrival of aircraft and troops so that the troops arrive at their respective loading points just before the helicopters land. This prevents congestion, facilitates security, and reduces vulnerability to enemy actions during PZ operations.

On the PZCO's signal, loads (sticks) move by designated routes from their holding areas to their loading points in the PZ. The PZCO may use schedules, messengers, arm-and-hand signals, light signals, or (as a last resort) radio to order loads to move to the PZ.

c. Helicopter Movement to Pickup Zone. Aircraft begin movement to arrive in the PZ at the scheduled time. The PZCO contacts the aviation element if there is a PZ change. If there has been a change in allowable lift/load, number of aircraft, or formation, the MC must contact the PZCO.

(1) During air movement to the PZ, enemy antiaircraft or other fire may be encountered. Therefore, air reconnaissance may be used to locate and suppress enemy positions prior to the arrival of the helicopterborne lift aircraft. Attack helicopters will not normally land in the PZ. When the lift helicopters are to be on the ground for extended periods, the attack helicopters may occupy holding areas nearby or return to FARP sites. The C^2 helicopter is positioned where the command group can see and control critical events.

(2) Strict radio discipline is maintained throughout the operation; radio silence should not be broken unless absolutely necessary. Radio calls between aircraft are permitted only as a last resort when other signals are not appropriate.

(3) The helicopters should use terrain flying techniques en route to the PZ.

d. Lift-Off From the Pickup Zone. When the aircraft are loaded and ready for lift-off, the PZCO signals the flight leader using arm-and-hand or light signals. The flight leader may signal other aircraft by turning on (or off) his navigation lights. For example, upon landing, the lights are turned on, and when they are turned off, the flight lifts off. Members of the PZ control group may also relay the alert to lift-off to aircraft in the rear of the formation, or the flight leader simply lifts off and the others follow.

Lift-off should be at the time prescribed in the plan. However, the aircraft will not loiter in the PZ. If they are early they lift-off and alter speed so as to arrive at designated locations at appropriate times. This should place the first aircraft of the first lift in the LZ at H-hour.

Lift-off may be by single aircraft or by wave. Under some conditions (dusty PZ, restricted PZ, or high density altitude and no wind), it is best to break

waves into smaller increments. When possible, simultaneous lift-off is best for the following reasons:

- It is easier for the attack helicopter unit commander to plan his scheme of maneuver and provide security en route for aircraft.
- OPCON is easier.
- It reduces the enemy's time to fire at the aircraft.

The flight leader adjusts the flight's speed and rate of climb so all elements form into the en route flight formation at the required altitude.

7103. En Route to the Landing Zone

a. The MC predetermines the en route flight speed and the flight leader paces the flight to ensure the flight crosses the start point on time.

b. Radio silence is paramount; however, if directed in the order, flight leaders report to the MC on passing each checkpoint. Checkpoint information must be passed to the heliteam leader. En route radio calls are made only if the flight is late or if it is required to deviate from the plan.

c. Ground commanders, heliteam leaders, and aircraft crew members must remain oriented throughout the flight. They do this by following and verifying the flight route using terrain observation, maps, aircraft compass, and aircraft speed.

d. When a threat is encountered along the flight route, such as heavy enemy fire, the HTC gives the order for the HC(A) or MC to modify or switch to an alternate flight route. If the LZ needs to be changed, the HUC makes the decision and informs the HC(A) or MC. It is recommended that the HUC or an S-3 representative fly with the MC or the HC(A) to facilitate C^2.

7104. Security

a. Attack helicopters provide security for downed aircraft, route reconnaissance, and other assistance en route as directed by the ACE commander. The ACE commander develops the plan for TRAP.

b. Fixed-wing aircraft (when assigned this role) may work with attack helicopters to provide security to the flanks, front, and rear of the helicopter formation(s). When performing this role in a medium-to-high threat environment, specially equipped aircraft suppress or destroy surface-to-air missile sites and radar-directed guns. Other fixed-wing aircraft may be used to selectively jam enemy radar and communication signals using jamming transmitters or other methods.

c. Indirect fire weapons provide suppressive fires along the flight routes as planned or as necessary, when available.

7105. Landing Operations

a. Napalm and other incendiary ordnance are not normally used on the LZ and its immediate vicinity (just prior to landing), because foliage fire and smoke could endanger aircraft or hamper the mission. Wind direction, speed, and enemy air defense must be considered along with friendly indirect fire support.

b. Attack helicopters can be employed in various roles during landing operations. They may—

- Precede the lift element into the LZ (by a few minutes) for reconnaissance and/or to provide suppressive fires to prevent a time gap in LZ fires (provided by other support elements).
- Recommend last-minute changes regarding aircraft landing instructions.
- Provide area cover and neutralize known enemy positions, or provide security for lift aircraft while in the LZ area.
- Observe ground approaches to the LZ for possible enemy attacks.

NOTE: After the initial pass, attack helicopters may enter an overwatch flight pattern around the LZ.

7106. Command and Control Helicopter

At the initial point (IP), the C^2 helicopter moves into position (employing terrain flying) to observe and communicate with forward elements. To avoid enemy weapons, the pilot uses popup techniques to observe activity. The HUC will determine where he can best influence the action by remaining on the aircraft or joining the ground forces.

7107. Landing Zone Preparatory Fires

Preparatory fires should be planned for all primary and alternate LZs. The decision to initiate LZ preparatory fires is made by the LZ if he is in a position to effect such a decision. If he is not, the decision is made by the operations officer or FSC, whichever is appropriate. The FSC should travel with the ground commander to expedite fires and changes to preplanned fires. Fires are planned along all routes leading to the LZ, to the maximum extent possible. Planned fires should be intense. Fires shift or lift shortly before the first elements land. See figure 7-1 for a preparatory fire sequence.

a. In the development and sequencing of fire plans, the following are considered:

(1) Deception. False preparations may be fired in areas other than the objective area.

(2) Loss of Surprise. A preparation of long duration may reduce the possibility of surprise.

(3) Availability of Fire Support. The FSC considers the assets that can fire preparations and coordinates the arrangements with the artillery. Preparations by fixed-wing aircraft are requested through the FAC(A).

(4) Significant Targets. A known or suspected enemy force located in the vicinity of the LZ, regardless of size, warrants LZ preparation, if the LZ is to be used.

(5) Shifting Fires. Artillery fire continues throughout the assault phase, shifting from the LZ to known or suspected targets.

(6) Obstacles to Landing and Maneuver. Various types of ordnance used in a preparation can cause craters, tree blow-down, fires, smoke, and poor visibility on and near the LZ.

(7) Positive Control Measures. Control measures must be established for lifting or shifting fires; for example, RFL or restrictive fire area (RFA).

(8) Ammunition. Basic load and resupply limitations.

b. Because CAS station time is limited by fuel and enemy air defenses, the sequencing of supporting fires are carefully controlled by the FSC to obtain maximum, continuous support. To ensure that all fire support assets are utilized at the correct time, the FSC must be constantly informed as to the status of the flight. This allows him to orchestrate fires to coincide with the actual arrival of landing helicopters at the LZ. (See fig. 7-2.)

c. Another method of continuing fire support is to shift indirect fires to one flank, conduct a simultaneous airstrike on another flank, and use the attack helicopters to orient on the approach and retirement lanes. This technique requires precise timing and helicopter formation navigation to avoid flight paths of other aircraft and gun-target lines of indirect fire weapons.

7108. Landing Techniques

a. The HTF should land as planned unless last minute changes in the tactical situation force the commander to abort or alter the landing. The air crew must make every effort to keep the troops in their aircraft informed of the situation, especially of any changes to the original plan.

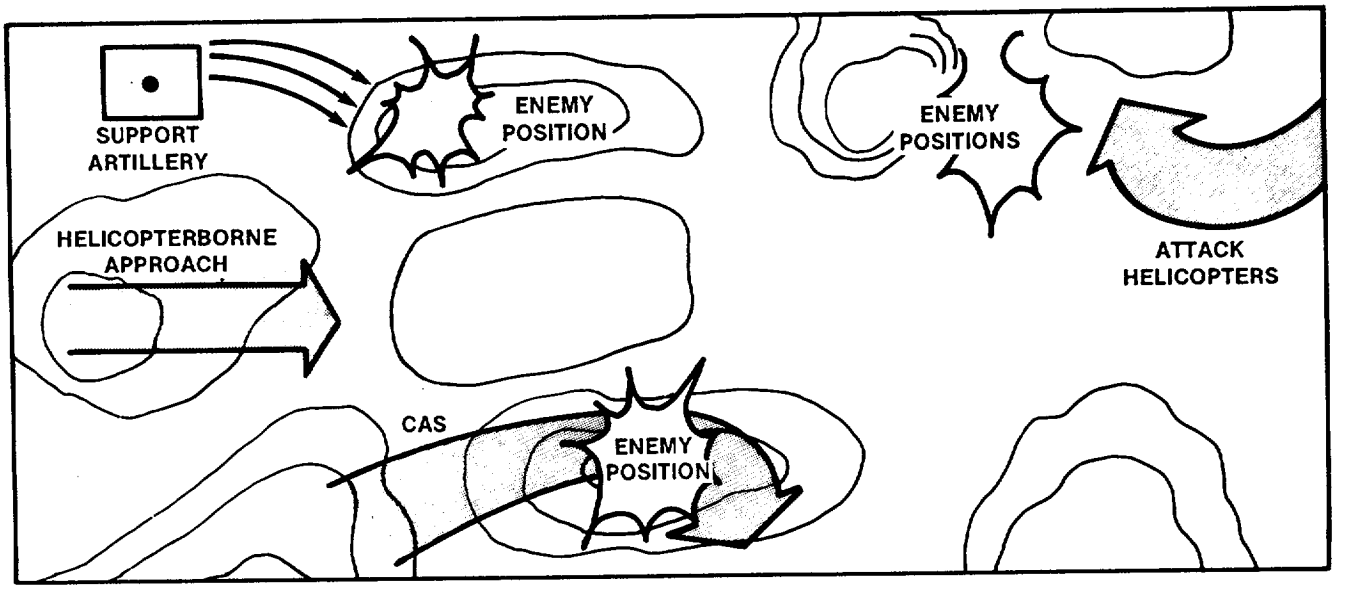

Figure 7-2. Supporting Arms in LZ.

b. A simultaneous landing is desired so as to place the maximum number of troops on the ground, in a given area, in the shortest possible time. Individual aircraft touchdown points are planned to disembark troops as close as possible to their initial positions.

c. In most operations, if the situation permits, the operation is accomplished with a minimum number of lifts, each with the maximum number of aircraft the LZ will accommodate. This reduces the exposure time of the aircraft, maintains unit integrity, provides maximum combat power, and gives the enemy less time to react. When separate element landings are dictated because of LZ size, time intervals between elements are kept as short as possible. Ideal timing has an aircraft element landing immediately after the preceding element lifts off.

d. Troops are most vulnerable during landing; they disembark rapidly and deploy to carry out assigned missions.

e. An air evacuation location is designated, normally at the approach end of the LZ. This permits continuation of the lift and prompt evacuation of the wounded.

f. At the LZ, leaders at all levels account for personnel and equipment and submit appropriate reports to higher headquarters. Key personnel killed, wounded, or missing are replaced according to unit SOP; key weapons missing or out of action may require the force to reorganize. After the unit completes its consolidation of the LZ, it reorganizes as necessary to carry out the ground tactical plan. Ground combat operations are not significantly different from those conducted by other infantry units.

7109. Completion of the Landing Zone Operation

a. When the LZ operation is finished, aviation elements return by preselected routes to complete subsequent lifts or to conduct other operations or, if prescribed in the order, move to a laager site.

b. If subsequent lifts are required in the same operation, the procedures described above are repeated. Planning starts from the assembly area and progresses through the final objective. If an extraction is required, PZ(s) in the vicinity of the objective are selected during the initial planning phase. The HUC must know the purpose of the ground tactical plan so he can formulate plans subsequent to accomplishment of the initial mission.

Section II. Sequence of Actions for Helicopterborne Operations

The following lists provide a sequence of action taken by the HTF commander, his staff, and subordinate unit commanders in planning a helicopterborne operation. The list is not all inclusive. Certain actions may be omitted for some operations.

Helicopterborne GCE commander takes the following actions:

- Receives warning order.
- Conducts mission analysis.
- Receives initial information from the air mission commander.
- Gives warning order to staff and subordinates.
- Receives personnel status report from S-1.
- Receives equipment status report from S-4.
- Receives enemy situation briefing from S-2.
- Receives friendly forces information briefing from S-3.
- Continues analysis of mission, enemy, terrain (and weather), troops, and time available.
- Receives higher headquarters operation order.
- Begins development of commander's estimate.
- Provides guidance to staff as needed.
- Receives staff estimates.
- Obtains data from staff as needed.
- Announces concept.
- Supervises development of operation order.
- Receives air movement information. Coordinates air movement matters with ACE.
- Receives air loading plan from S-3.
- Receives copy of operation order from S-3.
- Approves or modifies and approves operation order.
- Issues or oversees issuance of operation order.
- Conducts or oversees conducting of operation order brief.

ACE or air mission commander takes the following actions:

- Receives warning order.
- Conducts mission analysis.
- Gives initial planning information to GCE and staff.
- Receives GCE warning order.
- Receives friendly forces information briefing from S-3.
- Provides technical advice to GCE XO and S-2 for PZ and LZ identification.
- Coordinates with supported unit staff.
- Provides information to aviation unit on ground unit operation.
- Provides advice to GCE S-3 on PZ selection.
- Provides flight route information to GCE S-2.
- Assists XO in PZ control plan.
- Assists GCE AO with flight route computations.
- Provides advice to GCE S-3 on LZ and flight route selection.
- Obtains PZ and/or LZ, flight routes, and aircraft allocation from GCE AO.
- Obtains PZ control plan from GCE XO (PZCO).
- Aids GCE S-4 in selecting logistic PZ(s).
- Coordinates aircraft internal and sling equipment loads with GCE S-4.
- Obtains air movement plan from GCE S-3.
- Briefs aviation unit on operation.
- Inspects PZ(s) with GCE XO.
- Receives GCE operation order.

Helicopterborne force, XO takes the following actions:

- Receives warning order.
- Receives personnel status report from S-1.
- Receives equipment status report from S-4.
- Receives enemy situation briefing from S-2.
- Receives air mission commander (AMC) initial information.
- Receives friendly forces information from S-3.
- Determines available PZs. Obtains advice from AMC.
- Submits PZs to S-3.
- Coordinates staff planning.
- Obtains PZ from S-3.
- Develops PZ control plan.
- Coordinates PZ operations with AMC and/or terminal controller(s).
- Receives GCE commander's concept.
- Obtains PZs, LZs, flight routes, and aircraft allocation from S-3.
- Coordinates PZ operations with S-1. Completes bump and straggler control plan.
- Inspects PZs with PZCO(s).
- Briefs PZ control plan to subordinate PZCO(s).
- Obtains air movement plan from S-3.
- Obtains airloading plan from S-3.
- Obtains sequence of bump from subordinate units. Annotates air movement plan with sequence of bump.
- Completes PZ control plan. Submits to S-3.
- Inspects PZs with MC.
- Receives operation order.

Helicopterborne force, S-1, takes the following actions:

- Receives operation notification.
- Assembles personnel data.
- Receives helicopterborne warning order.
- Reports personnel status to commander and staff.
- Receives MC initial information.
- Receives friendly forces information briefing from S-3.
- Begins mission analysis from personnel standpoint.
- Begins preparation of staff appraisal (personnel).
- Provides S-3 with staff appraisal (personnel).
- Receives commander's concept.
- Coordinates PZ operations with battalion XO. Develops straggler control plan.
- Briefs subordinate unit personnel on straggler control plan.
- Receives CP's general location from S-3.
- Coordinates prisoner of war (POW), civilian control plan with S-2.
- Completes POW, civilian control plan. Coordinates with S-4.
- Completes S-1 portion of paragraph 4, operation order. Gives to S-4.
- Receives air loading plan from S-3.
- Coordinates with headquarters commandant. Develops plan for CP displacement and security.
- Coordinates CP displacement plan with S-3.
- Plans for recovery and evacuation of the dead, coordinates with S-3 and S-4.
- Receives operation order.

Helicopterborne force, S-2, takes the following actions:

- Receives operation notification.
- Requests any needed maps through higher headquarters.
- Assembles intelligence data.
- Requests weather forecast.
- Distributes maps.

- Briefs commander, staff, and subordinate unit commanders on enemy situation.
- Obtains advice concerning LZs from ACE (MC) or SRIG.
- Determines available LZs.
- Submits LZ list to S-3.
- Analyzes weather forecast.
- Obtains advice concerning flight routes from AO and MC.
- Determines available flight routes.
- Provides available flight routes to S-3 (AO).
- Recommends priority intelligence requirements and information requirements.
- Develops intelligence collection plan.
- Requests aviation reconnaissance and/or aerial photographs of routes, LZ(s), and objectives.
- Begins preparation of staff appraisal (intelligence).
- Provides intelligence data to commanders and staffs.
- Processes intelligence data gathered.
- Completes staff appraisal (intelligence).
- Provides S-3 with staff appraisal (intelligence).
- Continues processing intelligence data; provides to commanders and staff.
- Recommends employment of ground surveillance radar or STA platoon to S-3.
- Recommends targets to FSC through S-3.
- Completes paragraph 1 (enemy forces) of operation order and submits to S-3.
- Continues processing intelligence data; provides to commanders and staffs.
- Coordinates development of POW and civilian control plan with S-1.
- Provides all intelligence data to commanders and staffs as it becomes available (aerial photographs, reconnaissance mission results).
- Updates intelligence map as needed.

Helicopterborne force GCE, S-3, takes the following actions:

- Receives warning order.
- Assembles data on friendly elements.
- Receives MC initial information through the AO.
- Receives warning order.
- Receives personnel status from S-1.
- Receives equipment status from S-4.
- Receives enemy situation from S-2.
- Briefs MC's initial information.
- Briefs friendly forces disposition and location.
- Begins development of courses of action.
- Obtains input on SRIG employment.
- Receives list of available LZs from S-2; available PZs from XO.
- Receives higher headquarter's operation order.
- Begins preparation of staff estimates for operations.
- Selects PZs. Briefs XO and AO on PZ selection.
- Obtains available flight routes from MC through AO.
- Consolidates staff information.
- Recommends LZs and flight routes.
- Determines need for indirect fire preparations.
- Determines need for EW support.
- Provides staff estimate of supportability to commander.
- Receives commander's decision.
- Begins preparation of operation order.
- Provides XO and AO with PZs and aircraft allocation.
- Selects general location for CP. Provides information to staff.
- Receives S-2 input to operation order. Receives administrative-logistical portion of order from S-4.
- Completes operation order paragraphs 1, 2, and 3, to include concept and major subordinate unit paragraphs.
- Receives air movement plan from AO.
- Receives fire plan from FSC.
- Receives EW support plan from CommO.
- Obtains airloading plan from AO.

- Receives paragraph 4 of the operation order from S-4.
- Completes paragraph 5 of the operation order.
- Completes operation overlay.
- Coordinates CP displacement with Headquarters Commandant.
- Obtains PZ control plan from XO.
- Completes operation order with annexes. Submits to commander for approval.
- Receives operation order from the commander.
- Issues operation order, when directed by the commander.

Helicopterborne force GCE, S-3 (AO), takes the following actions:

- Receives operation notification.
- Receives helicopterborne warning order.
- Receives personnel status from S-1.
- Receives equipment status from S-4.
- Receives enemy situation briefing from S-2.
- Receives MC initial information.
- Analyzes MC's initial information for available assets.
- Assists S-3 in preparation of air movement plan.
- Recommends air requests to S-3 and processes air requests from S-3.
- Obtains PZs from S-3; provides PZs to FSC and staff as needed.
- Establishes necessary liaison with the tactical air control party (TACPs) and coordinates preplanned air support.
- Receives available flight routes from S-2.
- Computes flight route time and distance.
- Provides available flight route information to S-3.
- Receives helicopterborne commander's concept.
- Obtains LZs, flight routes, and aircraft allocation from S-3. Provides data to MC, FSC, subordinate unit commanders, and staff, as needed.
- Obtains any additional tactical air requirements from FSC.
- Initiates requests for air support of all types. (Submits Assault Support Request.)
- Obtains logistic PZs from S-4.
- Completes air movement plan, submits to S-3 for approval.
- Distributes air movement plan.
- Obtains subordinate air loading plan.
- Consolidates air loading plans; provides to helicopterborne commander, S-3, XO, and S-1.
- Receives operation order.

Helicopterborne force GCE, S-4, takes the following actions:

- Receives operation notification.
- Obtains maps requested by S-2.
- Assembles equipment data.
- Receives helicopterborne warning order.
- Receives personnel status from S-1.
- Reports equipment status to commander and staff.
- Receives enemy situation briefing from S-2.
- Receives MC's initial information.
- Receives friendly forces information from S-3.
- Begins mission analysis to determine requirements.
- Receives initial supply requirements from subordinate units.
- Begins preparation of staff appraisal (logistics).
- Determines effects of ammunition supply rate on operation. Submits ammunition supply rate to FSC.
- Compiles material usage data for operation. Obtains PZs from S-3 (AO).
- Compares usage data to materiel available.
- Requests materiel as needed.
- Coordinates with MC on establishing FARP.
- Provides S-3 with staff appraisal (logistics).
- Receives helicopterborne commander's concept.

- Begins development of support plan for operation. Obtains LZs and flight routes from S-3.
- Selects logistics PZs; provides to S-3 (AO).
- Plans aircraft loads (internal and external) for mission support. Coordinates pickup points with MC and/or S-3 AO.
- Coordinates plans for evacuation of enemy materiel with S-2.
- Receives operation order.

Helicopterborne force GCE, FSC, takes the following actions:

- Receives operation notification.
- Begins mission analysis to determine available and needed means of fire support.
- Plots locations and capabilities (range fans) for all indirect fire support systems supporting the force.
- Estimates fire support needed.
- Obtains ammunition supply rate from S-4 and S-3 of artillery unit. Determines effects of ammunition supply rate on operation. Gathers information for development of fire support plan.
- Obtains PZs from S-3.
- Continues to gather information for development of fire support plan.
- Coordinates fire support requirements with S-3.
- Provides S-3 with available fire support recommendation for indirect fire preparations.
- Obtains LZs and flight routes from S-3 (AO).
- Obtains recommended targets from S-2. Develops air requests to support ground tactical plan.
- Completes fire support plan.
- Submits fire support plan to S-3 for commander's approval; on approval, distributes.

NOTE: Subordinate units will develop their fire support plans. FSC will coordinate and consolidate them into the helicopterborne plan.

- Receives operation order.

The subordinate unit commander takes the following actions:

- Receives operation notification.
- Gathers personnel and equipment data.
- Reports personnel and equipment to battalion staff. Receives maps.
- Receives battalion warning order.
- Issues company warning order.
- Determines initial supply requirements.
- Subunits initial supply requirements to S-4.
- Begins preparation of air loading plans.
- Continues mission preparation.
- Obtains appropriate PZs, LZs, flight routes, and aircraft allocation from S-3.
- Continues mission planning.
- Obtains air movement plan from S-3.
- Completes air loading plan.
- Submits air loading plan to S-3.
- Receives operation order.
- Analyze mission.
- Develop fire support plan.
- Develop ground tactical plan.
- Prepare operation order.

Section III. Action of the Helicopterborne Force Commander

7301. Planning Sequence

The commander carefully analyzes the tasks and elements that are required to accomplish his assigned mission. As indicated in chapter 1, paragraph 1005b, when planning unit tasks, the commander is careful to maintain unit integrity.

a. As indicated in chapter 3, the commander will consider the five basic plans that comprise the helicopterborne force operation. These plans—the ground tactical plan, the landing plan, the air movement plan, the loading plan, and the staging plan—are developed concurrently.

b. The ground tactical plan is driven by the assigned mission and is, therefore, developed first. Consequently, it forms the basis from which the other plans are derived.

7302. Time Schedule

Planning for the helicopterborne force operation requires time—time to plan, time to prepare, and time to brief. The planning will be as detailed as time will permit.

The HTC, Commanding Officer, 3d Battalion, ____ Marines, received the MEB warning order at 0900. He determined that his force would be ready to land, L-hour, at 0600 the next morning. At 0945, he met with his staff and officers at the battalion CP and issues his warning order. Using the reverse planning sequence, the HTC outlined the following schedule:

0600	L-hour
0530	1ST assault wave departs PZ
0515	En route from assembly area to PZ
0500	Units arrive assembly/staging areas
0415	Reveille
2100	Bn XO's brief
2000	Status update from Bn staff
1800	Evening meal
1700	Issue operations order X-9X (JUSTSAYNO)
1600	Receive S-2 intelligence brief
1500	Receive S-4 equipment and logistical brief
1400	Receive S-1 personnel status brief
1300	Receive S-3 brief
1200	Noon meal
1100	Complete issuance of warning order
0945	Issue warning order

7303. Ground Tactical Plan

1. As indicated in chapter 3, paragraph 3303, all planning evolves around the ground tactical plan. The plan specifies actions in the objective area which ultimately accomplish the mission. In this situation, the battalion commander is literally faced with three (3) primary objectives.

a. Primary Objective Number 1: LZ SNOWBIRD.

b. Primary Objective Number 2: Objective Z, the Ande Municipal Airport.

c. Primary Objective Number 3: Link up with the mechanized force.

2. The battalion commander is determined to keep the operation as simple as possible. Therefore, he assigned one mission to each of his rifle companies.

a. Company I (reinforced) would secure Primary Objective Number 1, LZ SNOWBIRD. Company I would provide security at the LZ and guidance to all incoming assets. The company commander would exercise control over the LZ, provide guides for the incoming units, and maintain security to preclude paramilitary forces from disrupting the landing plan. Once Company L had arrived, Company I would become the battalion reserve.

b. Company K (reinforced) would follow Company I into LZ SNOWBIRD and immediately deploy to seize Objective Z, the Ande Municipal Airport. Company K would continue operations until it had secured complete control of the air facility. This control would be established to allow ____ MEF and the government of Grande to operate from the air strip and use the buildings.

c. Company L (reinforced) would initially act as the reserve unit. Company L would help the

designated PZCO, CO, H&S Company. Company L would provide security for the PZ and personnel as needed to assist units moving from the staging/assembly areas to the PZ, as well as, help load materiel into aircraft as needed. On order, Company L would load at the PZ, land in LZ SNOWBIRD, and conduct the linkup operation.

3. A warning order was given to the battalion staff and company commanders at the 0945 meeting.

7304. Landing Plan

1. **General.** As indicated in chapter 3, paragraph 3304, the landing plan must support the ground tactical plan. Consequently, the commander examined the following:

a. Helicopter assets were available to enable two reinforced companies to be airlifted simultaneously. The battalion commander decided to lift Company I (reinforced) en masse. They would land in LZ SNOWBIRD at 0600 and secure it. Fifteen (15) minutes later, Company K (reinforced) would land in a single wave.

b. Once Company K had departed the LZ, the rest of the battalion could commence air movement. Initially, the battalion CP would land with Company K and set up in the vicinity of LZ SNOWBIRD. On signal, the battalion CP would establish itself in the vicinity of the Ande Municipal Airport.

c. At the conclusion of landing operations, Company I would remain in the areas adjacent LZ SNOWBIRD.

2. **Special**

a. The landing plan will sequence elements into the AO to ensure that elements arrive at the designated location at the designated time to execute the ground tactical plan.

b. As indicated in chapter 3, paragraph 3304, The following considerations were examined and decisions were made.

(1) Size and location of LZ.

(2) Forces we anticipate encountering in and around the LZ.

(3) Unit tactical integrity.

(4) Ensuring all Marines are briefed and oriented.

(5) Ensuring Company I is sufficiently task-organized and equipped to destroy the enemy in the area and secure the LZ.

(6) Ensuring the landing plan offers flexibility in the event circumstances require it.

(7) Planning supporting fires in and around the LZ.

(a) Plan fires for air movement.

(b) Plan fires for the landing.

(c) Plan fires for subsequent operations.

(8) Ensuring plans are made for resupply and MEDEVAC.

7305. Air Movement Plan

1. The air movement plan is based on the ground tactical plan and the landing plan. It specifies the schedule and provides instructions for air movement of troops, equipment, and supplies. Furthermore, it provides coordinating instructions regarding air routes, control points, speeds, altitudes, and formations. The planned use of air fire support, security, and linkup operations should be included.

2. Air movement for this operation will be developed by the AO in coordination with the ACE.

3. Tentative flight routes were selected by the HTC.

4. The air movement plan is prepared jointly by the GCE and the ACE.

a. The air movement plan contains the aircraft allocations, designates the number and type of aircraft for each wave of the operation, and specifies the departure points, the routes to and from the PZ and LZ, and the loading, liftoff, and landing times.

b. The air movement plan ensures that all required personnel and materiel are accounted for in the movement and that each aircraft is properly loaded, correctly positioned, and directed to the LZ.

7306. Loading Plan

1. As indicated in chapter 3, paragraph 3306, the loading plan is based on the air movement plan. It ensures troops, equipment, and supplies are loaded on to the correct aircraft. Unit integrity is essential; however, personnel weapons, and equipment may be cross-loaded so that C^2 assets, combat power, and an appropriate weapons mix arrive in the LZ ready for combat.

2. A bump plan ensures that essential personnel and equipment are loaded ahead of less critical loads in case there are aircraft breakdowns or delays. The loading plan for 3d Battalion, ____ Marines was contained in the battalion SOP for helicopterborne operations.

3. Load plans are carefully coordinated with the aviation elements and verified by the embarkation officer and the AO.

4. The loading plan will control the movement of troops, supplies, and equipment at the PZ, designate unit loading sites, and control the arrival, loading, and departure of all aircraft.

5. 3d Battalion, ____ Marines SOP was detailed, well-planned, and well-rehearsed.

6. The PZ was selected by the battalion commander and the headquarters commandant was designated the PZCO.

7307. Staging Plan

1. The staging plan was based on the loading plan and was covered in the battalion SOP for helicopterborne operations. It prescribed the arrival times of units at the PZ in the proper order for movement.

2. Loads stand by at the PZ ready for the arrival of the aircraft. The staging plan restates the PZ organization, defines routes to the PZ, and provides instructions for linking up with the aircraft.

Section IV. Helicopterborne Practical Exercise

This is an example of a helicopterborne operation in a counterinsurgency situation, with map overlay schematics, and operation order, describing a unit in action.

7401. General Situation

a. The MEB, as part of a JTF, has been deployed to Valaras for an unspecified period of time. The deployment of the MEB was in response to a request for increased US assistance due to the deteriorating military and political situation within Valaras. The MEB will augment the Valaras army and provide the needed additional forces for security operations until the Valaras army is expanded. After completion of the deployment phase, the MEB set up support bases in their assigned area of operations to sustain operations ashore. The 2d Battalion began conducting offensive operations in the area.

b. On 10 June, a reconnaissance detachment located what is believed to be a guerrilla base camp. The enemy force concentration indicated they were preparing for an offensive operation within several days. The reconnaissance detachment stated the camp was occupied by an estimated reinforced platoon of 50 to 60 men armed with assault rifles, machine guns, ROG rocket grenade launchers, and SA-7 portable air defense missiles. The fleeting target would have to be attacked quickly or an opportunity would be lost. The MAGTF commander ordered the GCE commander to destroy the enemy force and the guerrilla base camp. The GCE commander assigned the mission to his 2d Battalion.

7402. Special Situation

The 2d Battalion is in an assembly area on the north side of the MEB operational support base. At 101100June, the battalion received the GCE's order to conduct a helicopterborne assault to destroy the enemy force and the guerilla base camp at 110530June. The battalion immediately began preparing for the operation. The battalion commander issued a warning order to subordinate commanders and planning guidance to his staff which resulted in the formulation of an operation order. A copy of the written order follows:

Sample Helicopterborne Assault Operation Order

CLASSIFICATION

Copy no. __ of __ copies
OPORD 001-89
2d Bn
101100SJUN

ANNEX B (Operation Overlay) to Operation Order 1-89 (Operation EAGLE)

Ref: Map, series B142, Valaras 1:50,000

Time Zone: Sierra

Task Organization: See Tab A

1. SITUATION

a. Enemy Forces

(1) Elements of a reinforced company occupy positions via (_____).

(2) The enemy is capable of employing dismounted weapons systems; it is unlikely that the enemy will have substantial artillery support.

(3) The enemy is expected to initially defend but most likely avoid decisive engagement and attempt to escape along trails to the southeast and southwest from the guerrilla base camp.

(4) The enemy commander's specific intent is to conduct political, economic, and military activities within 2d Bn's area of operations. He will encourage the local population to support his cause by providing select members with economic assistance. This assistance provides basic food and medical supplies. Locals not responding to the enemy's solicitation are terrorized. The enemy will attempt to draw our forces into situations involving damage to the local population.

b. Friendly Forces

(1) Higher mission and commander's intent.

(a) The MEB's mission is to conduct a series of limited objective operations to isolate and destroy specific guerrilla base camps. The focus of main effort is at the Polega Camp located vic grid ____. Polega Camp contains select military commanders and revolutionary leaders. The MEB will then execute a series of stability operations specifically designed to assist the friendly government in maintaining internal stability and public welfare.

(b) The MEB commander's intent is to destroy select guerrilla base camps to prevent the enemy from exercising hostilities against the friendly government and MEB forces. The MEB commander desires to minimize collateral damages to the local population and to other communities within the objective area.

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(2) Adjacent units will be conducting similar operations in their assigned areas.

(3) Supporting: HMM ____ is task-organized with ____ CH-46s, ____ CH-53s, ____ AH-1s, and ____ UH-1Ns.

c. Attachments and Detachments: None.

2. MISSION

2d Battalion conducts a limited objective helicopterborne assault to attack and destroy the enemy forces and the guerrilla base camp, located vicinity grid ____.

3. EXECUTION

a. Concept of operations. Annex B (Operations Overlay)

(1) Maneuver. 2d Bn conducts a helicopterborne attack from three PUZs (X, Y, and Z) to multiple LZs to seize Objectives RED, WHITE, and BLUE. One company will land at LZ ROBIN (____) and establish platoon-size blocking positions within OBJ RED (____), to destroy any escaping enemy fleeing from the guerrilla base camp. One company will land at LZ SPARROW and make the main attack to destroy the enemy forces and the guerrilla base camp at OBJ WHITE. One company will land at LZ HAWK and establish platoon size blocking positions within OBJ BLUE (____), to destroy any escaping enemy from the guerrilla base camp. MY intent is to attack the guerrilla base camp to destroy it, killing or capturing as many guerrillas as possible and to simultaneously position two companies along the primary routes of escape to set up platoon-size blocking positions to kill or capture escaping guerrillas. It is also my intent to confine death and destruction to the guerrilla base camp at OBJ WHITE, to the maximum extent possible. Although fleeing enemy may be engaged by elements of the blocking force, every effort must be made to prevent collateral damage to the local population. Priority of action in order of sequence outside the guerrilla base camp is protection of friendly forces, protection of the local population, killing and capturing fleeing enemy.

(2) Fire Support. Annex D (Fire Support Overlay).

(a) Priority of artillery fires initially to Co B then, to Co A.

(b) A 3-minute prep will be fired on LZ SPARROW from H-5 to H-2.

(c) Priority of mortar fires, upon completion of helicopterborne landings, initially to Co B, then to Co C.

(d) There will be no unobserved fires. All indirect fires will be observed.

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b. Tasks

(1) Co A

(a) On order, conduct helicopterborne attack from PZ X (____) to LZ ROBIN (____).

(b) Establish platoon-size blocking positions within OBJ RED (____).

(c) Be prepared to assist in the seizure of, or to attack, OBJ WHITE.

(2) Co B

(a) On order, conduct helicopterborne attack from PZ Y (____) to LZ SPARROW (____).

(b) Conduct a limited objective attack to destroy the enemy forces and the guerrilla base camp, OBJ WHITE (____).

(c) Do not pursue enemy force from OBJ WHITE.

(3) Co C

(a) On order, conduct helicopterborne attack from PZ Z (____) to LZ HAWK.

(b) Establish platoon-sized blocking positions within OBJ BLUE (____), across the major trail leading southeast out of the guerrilla base camp, oriented toward the northwest.

(c) Assume attachment of the mortar platoon at ____.

(4) Mortar Platoon

(a) On order, attached to Co C at ____.

(b) Conduct helicopterborne attack from PZ Z to LZ HAWK with Co C.

(c) Assume firing position located at (____), be prepared to displace on order.

(d) Priority of fires initially to Co B, then to Co C.

(5) Artillery: Annex D (Fire Support Overlay)

4. ADMINISTRATION AND LOGISTICS. Annex P (Combat Service Support).

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5. COMMAND AND SIGNAL

a. Command Relationships

(1) Alfa command group with Co B for the helicopterborne assault.

(2) CP to be established with Co B vic (____).

(3) COC will displace on order to (____).

(4) Succession of command: Bn Cmdr, XO, S-3, Co Cmdr Co B, Co Cmdr Co A.

(5) Co XO will be located with the Bravo Cmd Group.

(6) S-3 will be located in the C&C helo initially, then in the COC.

b. Signal

(1) CEOI #____ in effect.

(2) Helicopterborne net frequency is ____; alternate frequency is ____.

(a) All stations enter at 110445 Jun.

(b) Ground elements leave net upon securing the LZ. Ground elements send code word BIG SKY when leaving the helicopterborne net.

(c) Aviation units remain on helicopterborne net until mission complete.

(3) Emergency signal to lift fires is code word BRONCHO.

(4) Companies mark location with colored smoke as indicated:

Co A – Yellow
Co B – Violet
Co C – Green

(5) Medical evacuation frequency is ____.

ACKNOWLEDGE RECEIPT /s/_____

ANNEXES:

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Section V. Helicopterborne Practical Exercise II

This helicopterborne force practical exercise illustrates the planning process involved in a linkup with a mechanized force.

7501. General Situation

a. For several years, the mountains of Grande have harbored and grown guerrilla forces who have opposed the established national government. The guerrilla forces have been receiving assistance from a neighboring communist country for the last two years. The newly elected president of Grande has requested assistance from the United States to stop the flow of enemy forces and support from the neighboring communist country. The president of the United States has determined that we will provide assistance by sending a MEB as part of a JTF. The JTF will augment the Grande army and provide the additional forces necessary to disrupt infiltration from the neighbor communist country until the Grande army can organize and expand. After completion of the deployment phase, the MEB will set up support bases in their assigned area of operations ashore.

b. The enemy force headquarters is located at Ande, a rather large city deep within the Andrea mountains. It is accessible by land, over two highways, and by air.

c. After completion of the deployment phase, ____ MEB set up support bases in their assigned area of operations to sustain operations ashore.

7502. Special Situation

a. On ____ August, friendly operatives in Ande reported movement among enemy forces. Reports indicate the enemy force is preparing for a major offensive. Enemy units are armed with assault rifles, machine guns, rocket grenade launchers, and portable air defense missiles. ____ MEB has been assigned to neutralize the enemy force and to seize the Ande Municipal Airport.

b. 1st Battalion, ____ Marines is in an assembly area on the north side of the capital city of Villa Perez and will protect the city from attack.

c. 2d Battalion, ____ Marines is in an assembly area west of Villa Perez and will conduct a mechanized operation along the Costa Andrea Highway to Ande. This is the expected enemy route of advance.

d. 3d Battalion, ____ Marines is in an assembly area southwest of Villa Perez and will conduct a helicopterborne assault into Ande to seize the Ande Municipal Airport and prepare to link up with the 2d Battalion by cutting off the enemy's retreat.

e. A copy of the written order follows:

Sample Helicopterborne Assault Operation Order

CLASSIFICATION

Copy no. __ of __ copies
OPORD XXX-9X
3d Bn, ____ Mar
XX1015SAUG 199X

OPORD X-9X (JUSTSAYNO)

Ref: Map, series G123, Grande Tourisimo 1:50,000

Time Zone: Sierra

Task Organization: See Tab A

1. SITUATION

a. General. Friendly operatives have reported the movement of two enemy companies along the Costa Andrea Highway toward Villa Perez. One company has been moving by foot and one company seems mechanized.

b. Enemy Forces. See Annex B (Intelligence).

c. Friendly Forces

(1) ____ MEB has been assigned to neutralize the enemy and to seize the Ande Municipal Airport.

(2) 1st Battalion, ____ Marines is the MEB reserve and will be located outside Villa Perez to guard both roads coming from Ande.

(3) 2d Battalion, ____ Marines will conduct a mechanized advance along the Costa Andrea Highway to locate, close with and destroy the enemy in zone.

(4) See Annex C (Operations).

(5) See Annex D (Logistics).

(6) See Annex E (Personnel).

(7) See Annex M (Air Operations).

d. Attachments and Detachments. See Annex A (Task Organization).

2. MISSION

On order, 3d Battalion (Rein) conducts a helicopterborne attack, seizes and controls Objective Z, seals off the enemy's retreat route, captures the retreating enemy and prepares to linkup with 2d Battalion.

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3. EXECUTION

a. Concept of Operations. 3d Battalion (Rein), on order, conducts a helicopterborne assault at L-hour with three (3) companies (Rein) to seize LZ SNOWBIRD; continue the attack to seize Objective Z. One company (Rein) initially in reserve. Be prepared to control assigned TAOR to prevent the enemy from escaping along the highway and to prevent reinforcements from the city of Ande. On order, support by fire the seizure of Objective Z. On order, one company (Rein) man linkup points. Mortar platoon priority of fire to linkup company. Heavy machine gun platoon priority of fire to seize company. It is my intent to seize Objective Z in order to execute additional offensive operations as the situation permits.

b. Tasks

(1) Co I (Rein)

(a) On order, conduct helicopterborne attack; secure LZ SNOWBIRD.

(b) Remain in the vicinity of, and maintain security of, LZ SNOWBIRD.

(c) Prevent enemy from occupying or controlling LZ Snowbird.

(d) On order, assume reserve.

(2) Co K (Rein)

(a) Land by helicopter in LZ SNOWBIRD.

(b) On order, seize Objective Z.

(c) Establish control of the Airport.

(d) Prevent enemy reinforcement in assigned zone.

(3) Wpns Co

(a) 81mm Mortar Platoon
* Land by helicopter in LZ SNOWBIRD.
* GS 3d Bn, Mar; priority of fires to Co L.

(b) Heavy Machine Gun Platoon
* Attached to Co K for assault of Objective Z.

(c) Antiarmor Platoon
* Land by helicopter in LZ SNOWBIRD.
* GS 3d Bn, Mar.

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c. Reserve: Co L (Rein)

(1) Be prepared to land by helicopter in LZ SNOWBIRD.

(2) Be prepared to assume the mission of any assault company.

(3) Be prepared to occupy a portion of tactical area of responsibility; prevent enemy movement through sector.

(4) On order, conduct linkup with 2d Battalion.

d. Coordinating Instructions

(1) Use smoke only on authority from this Headquarters.

(2) Base Unit for contact: Co I.

(3) L-hour: 0600.

(4) D-day: XX August 199X.

4. ADMINISTRATION AND LOGISTICS

See Annex D (Logistics), Annex E (Personnel), Annex F (Public Affairs), Annex G (Civil Affairs), and Annex M (Air Operations).

5. COMMAND AND SIGNAL

a. Command Relationships. See Annex J (Command Relationships).

b. Signal. See Annex K (Communications-Electronics).

c. Command Posts. Report CP locations.

ACKNOWLEDGE RECEIPT

T. B. STEELE
Lieutenant Colonel, U. S. Marine Corps
Commanding

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ANNEXES:

A – Task Organization
B – Intelligence
C – Operations
D – Logistics
E – Personnel
F – Public Affairs
G – Civil Affairs
H – Environmental Services (Omitted)
J – Command Relationships
K – Communications-Electronics
L – Operations Security
M – Air Operations
P – Combat Service Support
R – Amphibious Operations (Omitted)
X – Execution Checklist (Omitted)
Z – Distribution

DISTRIBUTION: Annex Z (Distribution) to Operation Order XX-9X

Appendix A

Sample Helicopterborne Warning Order

1. SITUATION

   a. Enemy forces

   b. Friendly forces

      Co _____ likely to move by helo.

      Co _____ likely to move by helo.

      Co _____ likely to move by helo.

      _____ likely to move by _____.

      _____ likely to move by _____.

2. PROBABLE MISSION

   My commander's intent is _____

   My intent is _____

3. GENERAL INSTRUCTIONS

Anticipated PZs	_____	_____	_____
	_____	_____	_____
Anticipated LZs	_____	_____	_____
	_____	_____	_____
Anticipated objectives	_____	_____	_____
	_____	_____	_____

Anticipated helicopter availability:

Co _____, _____ CH-46, _____, _____ CH-53D, _____ CH-53E,

_____ UH1N, Anticipated number of lifts: _____.

Co _____, _____ CH-46, _____, _____ CH-53D, _____ CH-53E,

_____ UH1N, Anticipated number of lifts: _____.

4. SPECIAL INSTRUCTIONS

PZCO(s) _____ _____ _____ _____

LZCO(s) _____ _____ _____ _____

HST requested from LSB:

Marines _____

Equipment _____ _____ _____ _____

_____ _____ _____ _____

Appendix B

Sample Annex to Battalion SOP for Helicopterborne Operations

NOTE: This is an annex to a SOP for combat operations; it is not a complete SOP.

1. GENERAL

a. Purpose. This annex prescribes the organization and procedures to be followed in preparing for and executing helicopterborne operations. Only procedures peculiar to helicopterborne operations are included; otherwise, basic SOPs apply.

b. Application. Applies to all organic and supporting units under control of _____ Battalion, _____ Marines///_____ MEU, MEB, MEF.

2. PERSONNEL

a. Strength, Records, and Reports

(1) Companies will be organized into assault and rear echelons. Upon receipt of warning order, submit strength to S-1 and equipment availability status to S-4. S-1 and S-4 will forward to S-3 who will determine flight requirements.

(2) Upon entering LZ, companies will report personnel and equipment status to the battalion CP on the tactical net using the standard format.

b. Discipline and Order

(1) S-1 will establish a straggler control point on each PZ in vicinity of PZCO in coordination with S-3 and PZCO. All units will have a representative located at the straggler control point on their PZ(s). Bumped personnel will be reported to S-1 and/or PZCO by straggler control personnel for consolidation and rescheduling into appropriate LZ(s).

(2) Straggler control is company responsibility upon landing.

(3) Personnel landed in other than an assigned LZ are to report to the on-site unit commander (representative) immediately. Personnel are attached to that unit until ordered to return to parent unit by this headquarters. Gaining unit will report personnel attached to S-1 by number and parent unit. Do not include these personnel in unit strength reports.

c. Prisoner of War Evacuation. Prisoners of war (POWs) are to be reported immediately to the S-3, who will issue evacuation instructions. Indicate available PZ location for pickup by air in initial report. S-2 will determine whether to evacuate through battalion or direct to higher headquarters.

d. Medical Evacuation. Report all casualties for MEDEVAC by priority code.

(1) MEDEVAC requests follow standard format for casualties and are classified as routine, priority, or urgent. Radio frequency of supporting MEDEVAC unit will be included in each operation order. When MEDEVAC aircraft are not available and immediate MEDEVAC is required, make maximum use of empty lift helicopters departing LZ. **Do not interrupt airlanding operations**—use last helicopters in the flight.

(2) S-1 is responsible for providing CEOI, LZs, and flight route overlay to supporting MEDEVAC unit.

3. INTELLIGENCE

a. Weather

(1) Battalion S-2 will obtain and disseminate the following:

(a) Long-range forecast immediately after receipt of mission.

(b) Short-range forecasts up to H–2.

(2) Command weather reconnaissance one hour prior to lift-off will be coordinated among the com mander, S-2, and air mission commander.

(3) Operations are executed only on order of this headquarters when weather is below ½-mile visi bility and 100-foot ceiling.

b. Terrain

(1) Maximum utilization will be made of command aerial reconnaissance down to company commanders, consistent with aviation resources, available time, and tactical situation.

(2) Use sand table briefing techniques when possible in conjunction with maps and aerial photographs.

(3) Maps will be issued immediately after receipt of warning order, if available. If not available, they will be issued on receipt from higher headquarters.

(4) Aerial photographs will be made available upon receipt. S-2 will automatically process all request (conserving assets, as appropriate). Priority to answering essential elements of information (EEI Priority of issue to assault echelon.

c. E&E

(1) Personnel in aircraft forced to land behind enemy lines en route to the objective will:

(a) Establish immediate security in vicinity of downed aircraft.

(b) Remain in that location utilizing aircraft radios to contact recovery aircraft.

(c) Mark and clear suitable landing points for recovery and withdrawal helicopters.

(2) The senior ground force individual assumes responsibility for organization and conduct of security until recovery is executed.

(3) If the above is not possible due to enemy pressure, evade capture and attempt to join friendly units by infiltration. Personnel will attempt to E&E back along flight route. Maximum rescue effort will be directed along flight routes, with particular emphasis at checkpoints. Continuous attempts will be made to locate suitable landing points for withdrawal by helicopter(s). The wounded will be evacuated with infiltrating personnel. The dead will be concealed and stripped of weapons, ammunition, and items of intelligence value. Locations of dead left behind will be recorded.

(4) If enemy pressure becomes a threat to downed aircraft personnel, senior ground force individual will take steps to secure or destroy classified or sensitive items. Aircraft destruction will be on order of this headquarters if capture is not imminent. If contact with this headquarters cannot be made, the senior individual on the ground will make a decision on aircraft destruction to prevent capture by enemy.

4. OPERATIONS

a. Planning Phase

(1) Except when accomplished by higher headquarters, this headquarters will prepare plans in coordination with the supporting air mission commander.

(2) Plans will continue to be refined until executed. All operational information will be given to subordinate commanders as soon as determined particularly as follows:

(a) The size and composition of the force required to execute the mission.

(b) Allocation of assault and logistical aircraft, based on allowable cargo load provided by the MC.

(c) Designated PZs and helicopter PZ formation. Designated flight routes, LZs, and LZ helicopter formation.

(3) Coordination between the supported and supporting commanders must include, as a minimum:

(a) Enemy and friendly situation.

(b) Mission.

(c) Fire support plan.

(d) Abort and alternate plans.

(e) Weather to include minimums and delays.

(f) Type, number, and aircraft load of helicopters.

(g) Helicopter formations in PZ and LZ.

(h) Air movement information relative to timing for operations.

(i) Communication (primary and alternate frequencies and plans).

(j) Location and call sign of second in command.

(k) Required command reconnaissance by the helicopterborne commander and supporting aviation commanders.

(l) Time synchronization requirements.

(m) TRAP procedures.

(4) OPSEC. This will be emphasized in each phase of a helicopterborne operation. The object will be to conceal the capabilities and intentions of the helicopterborne force. The four general OPSEC measures will be considered for every operation: deception, signal security, physical security, information security. The S-2 will provide intelligence collection of threat data. The S-3 will ensure that the staff and subordinate commanders are aware of OPSEC measures to be employed to counter the threat. Emphasis must be placed on maintaining the elements of surprise and security. Additionally, all supporting elements must be aware of the necessity of maintaining a high degree of operational security. As a minimum, the commander, supporting commanders, and subordinate commanders should employ the following techniques:

(a) Deception

Camouflage vehicles, equipment, and personnel.
Overflights of other LZs (if aircraft are available and enemy situation does not preclude).
Insertion at night or during other periods of reduced visibility.
Noise and light discipline.
Dummy laager sites for aircraft.
Recon overflights of several objectives.

(b) Signal Security

Communications security techniques.
Radio listening silence.
Use of hand and arm signals (on the ground).
Use of low power and secure mode on radios.

(c) Physical Security

Use of security forces at LZ and PZ.
Use of wire, mines, barriers, and security troops at aircraft laager sites and troop assembly areas.
Use of SRIG to secure LZ, if possible.

(d) Information Security

Counterintelligence.
Strict control of all operational information.
Release information only to those with a need to know.
Last minute release of attack time (objective) and force composition.

b. Landing Phase

(1) The aircraft commander will notify each heliteam leader of any changes to the order, any change in LZ(s) and/or direction of landing, and when the helicopter is over the release point. The heliteam leader then informs his personnel of any changes and alerts them to prepare to unload.

(2) Passengers may not move in the aircraft until clearance has been obtained form the heliteam leader. After the heliteam leader gives the clearance signal, troops and equipment are unloaded as rapidly as possible.

(3) After all troops and cargo have been unloaded from the aircraft, the crew chief will check the helicopter and signal the heliteam leader that the cabin is empty. Departure from aircraft will be executed rapidly in the direction prescribed by battle drill.

(4) The heliteam leader ensures that members of his heliteam clear the LZ in a safe, expeditious manner. This prevents exposing personnel to unnecessary danger and prevents any delay in lift-off and landing of subsequent helicopters.

(5) Individual weapons will be fired only on order upon offloading unless enemy contact is made or if planned as part of the overall fire plan.

(6) Actions when there is no enemy contact on the LZ include:

(a) Move each helicopter load to the nearest covered and concealed position in direction of assembly area.

(b) Establish LZ security for succeeding lifts (if applicable).

(c) Assemble, organize, and account for all personnel.

(d) Report.

(7) Actions when enemy contact is made on the LZ include:

(a) Return fire immediately, upon offloading, with all available firepower to gain fire superiority.

(b) Fight by helicopter loads, using fire and movement, until platoon or company can be formed (according to battle drill).

(c) Request and coordinate fire support.

(d) Secure the LZ for succeeding lifts.

(e) Report.

(8) Keep the commander informed during all actions.

c. Air Movement Phase

(1) Maintain radio silence to maximum extent possible. Inability to comply with specific control times will be reported as prescribed in operation order (OPORD).

(2) Troop leader remains oriented by continuous map-terrain comparisons.

d. Loading Plan

(1) PZ is designated by this headquarters.

(2) Air officer will arrive prior to the helicopter flight and report to the PZCO for last-minute briefing and coordination. He will notify the air mission commander of any changes.

(3) Serials organized to support the ground tactical plan.

(4) Helicopters will land in the PZ(s) in the specified formation. Unit leaders will brief troops on the helicopter formation prior to arrival of helicopters at PZ.

(5) Helicopters should arrive at the latest possible time to reduce time-on-ground before loading.

(6) During a battalion move, the battalion executive officer, or designated representative, will act as the PZCO and the Headquarters Commandant will act as the landing zone control officer. Company XO will act as PZCO during company-sized operations and as unit PZCO during battalion-sized operations with separate company PZ. Platoon sergeants will act as PZCO during platoon-sized operations. PZCOs are responsible for developing and disseminating the PZ control plan. The PZCO will maintain contact with the air mission commander on a designated radio frequency. Each unit to be moved will have radio contact with the PZCO on a designated frequency. These personnel will establish radio contact with the PZCO 15 minutes prior to aircraft arrival. Units must be prepared to alter loads based on change of helicopter availability or change in allowable cargo load. Within each company, platoon, and squad, a priority of loading must be established. Priority of aircraft loads and personnel on each aircraft to be bumped will be designated. Personnel bumped report to the straggler control point immediately.

(7) Supporting aviation unit assists in planning for the execution of loading by providing technical advice and supervision.

(8) Heliteam leader supervises helicopter loading.

(9) Cargo or equipment to be transported externally is secured in cargo nets or on pallets for sling loading under helicopters. Hookup of these loads will be accomplished by the HST in the PZ.

(10) The following individual preparation will be accomplished:

(a) Fasten helmet chinstraps.

(b) Collapse bipods on M-60s and M-16s.

(c) Tie down loose equipment.

(d) Unload all weapons and place them on SAFE.

(e) Unfix bayonets (if fixed).

(f) Radio operators will use short whip antennas only. They will depress antennas to avoid breakage and to reduce the safety hazard. When directed, they will check communications with the tactical operations center. Ensuring that the radio remains on during flight. They will have a minimum of two extra batteries for each radio.

(g) An accurate list for each aircraft load by name, grade, and unit will be furnished to the battalion S-1, through the unit officer in charge of loading.

(11) This sequence should be followed during the loading phase:

(a) Secure PZ.

(b) Approach aircraft only after it has landed.

(c) Do not load until directed by PZ control personnel.

(d) Load at double time.

(e) Move to the aircraft and load as directed by the heliteam leader.

(12) When loading personnel or cargo into a helicopter, the heliteam leader ensures that the following is accomplished:

(a) All safety measures prescribed for movement in and about the helicopter are observed.

(b) All personnel approach the helicopter in the prescribed manner.

(c) Personnel will be aware of and avoid the tail rotor.

(d) All personnel and equipment will stay below the arc of the top rotor and load on the opposite side of the tail rotor. Personnel should be especially watchful when loading on the slope of a hill; approach and depart helicopter on downslope side. However, entering and exiting the helicopter should be made on the uphill side so the pilot can better control the helicopter.

(13) Briefing on emergencies will be conducted by an aviation representative prior to loading, as appropriate.

(14) After all equipment and personnel have been loaded, the heliteam commander determines the following:

(a) Equipment and cargo are in the proper places.

(b) Cargo or equipment is properly secured.

(c) Each Marine is seated and his safety belt fastened.

(d) Weapons are placed between legs; muzzle down.

(15) When the heliteam commander has checked to ensure that all cargo and personnel are secured, he will notify the aircraft commander.

(16) During flight, the pilot commands the aircraft. The heliteam leader ensures the following is accomplished:

(a) Cargo lashings (if applicable) are checked to determine that cargo is properly secured.

(b) Troops keep belts secured and do not smoke or sleep during flight.

(c) Troops stay seated and do not move around without authorization.

(17) In the event more than one lift is required, the PZCO will remain until the last lift to insure control and continuous communication.

(18) General Aircraft Load Planning

(a) All units will develop general load plans to facilitate movement on short notice.

(b) Necessary equipment, for aircraft loading and movement (nets, slings, and clevises), will be kept on hand.

(c) Battalion personnel will be organized and trained in loading equipment to include sling loads.

(d) Vehicles and major equipment will be prepared at all times to facilitate airlift operations. Vehicles and major equipment to be transported into objective area will be reported with strength figures.

e. Subsequent Operations

(1) Withdrawal by Air. Withdrawal from an area of operation requires thorough planning, close coordination, and controlled execution. The following are considered important for any withdrawal by air:

(a) Primary and alternate PZs and flight routes must be planned.

(b) Defensive concentrations must be planned around the PZ. The security force will protect the loading force and return fire if engaged. When the last elements are ready to load, the security force will call in required fires to cover withdrawal and use their own fire to cover their loading.

(c) Maintain all around security until the first helicopter is on the ground (never assemble too early).

(d) Plan the loads so that a force capable of defending itself constitutes the last lift (never leave less than a platoon size force). Platoon leader or sergeant, or squad leader, with radio will be the last man out of a PZ. He will report to his commander that the PZ is clear of all personnel and equipment and immediately notify the pilot of the helicopter he boards. Plan for at least two extra helicopters to go into the PZ to lift out the last unit, when possible.

(e) The attack helicopter unit will be in direct communication with the HUC.

(2) Displacement of Command Post

(a) Quartering Party

- Composed of S-1 or headquarters commandant, communications officer or representative and communications personnel, security element, and other necessary personnel.
- Selects location.

(b) Command and control helicopter will be utilized as main CP during movement.

(c) Quartering party duties upon landing include:

- Laying out new CP.
- Notifying old CP when new CP is ready for operation.
- Ensuring timely and orderly arrival and positioning of other CP elements.
- Opening new CP. Officer in charge notifies commander or S-3 when old CP has closed and when staff is operational in the new location.
- Controlling Responsibilities. C^2 helicopter will be used as tactical CP to control and direct subordinate elements during air movement. The old CP is responsible for the dissemination of information and reports to higher and adjacent headquarters until that function is formally passed to the new CP.

(3) Security of Aircraft in Unit Areas

(a) Passive Measures

- Laagers (occupancy, 1 to 36 hours).
  - Select proper terrain for laagers where access by enemy ground forces is difficult (for example, laagers surrounded by water or swamps).
  - Site aircraft to blend with terrain and vegetation (locate parking areas in shadows, near trees).
  - Park aircraft in laagers so that attack helicopters can provide security along avenues of approach. Lift of aircraft, if attacked by enemy, is the responsibility of the helicopter unit commander.
  - Utilize troops in or near the laagers to provide perimeter security. Helicopter unit will augment security.
- Semipermanent facilities (occupancy, one to seven weeks).
  - Use camouflage nets and natural materials to provide concealment.
  - Provide perimeter troop security around airfields and helipads.
  - Construct individual and helicopter bunkers and continue progressive improvement as time permits.

(b) Security of supporting aviation is the responsibility of the unit commander in whose area they are laagered or as designated by this headquarters.

5. LOGISTICS

a. Supply

(1) Accompanying Supplies—All Classes. Prescribed supplies will be established by this headquarters for each helicopterborne operation.

(a) Class I. Each Marine will carry three combat ration meals to be eaten on order.

(b) Class II and IV. Units take on one day supply of required combat essential expendables.

(c) Class III

- Vehicle fuel tank, three-fourth full; gas cans, filled to the weld.
- Units take one day supply of oil and lubricants on vehicles.

(d) Class V

- Units maintain basic load at all times.
- Available supply rates and priority of delivery as specified in OPORD.

(e) Class IX. Units take combat essential prescribed load list.

(f) Water. Marines carry two full canteens and one bottle of water purification tablets.

(2) All classes of supply delivered using unit distribution.

(3) Routine, planned supplies will be prepackaged to maximum extent possible by S-4.

(4) Emergency resupply containing ammunition, water, rations, and medical supplies will be prepackaged by the S-4 and will be ready for delivery as required.

b. Salvage

(1) Expedite recovery of aerial delivery containers, cargo nets, and pallets; commanders guard against damage, destruction, or loss.

(2) Units in objective area establish salvage collecting points when appropriate and practical.

(3) Salvage will be reported to this headquarters for disposition instructions.

c. Captured Material. Captured material may be used on approval of this headquarters. Evacuation of captured material is accomplished, as the situation allows, through S-4 channels.

d. Medical Support

(1) MEDEVAC of patients, until linkup or withdrawal, will be by air.

(2) Aid station location will normally be in battalion rear.

(3) Requests for MEDEVAC within the helicopterborne operations area will be made to the medical organization on the MEDEVAC frequency or the admin log net.

(4) POW casualties needing medical treatment will be evacuated through medical channels.

(5) Hospital locations will be announced for each operation.

e. Transportation and Troop Movement

(1) Vehicular

(a) Allocation of accompanying organic transport will be made by this headquarters.

(b) Captured vehicles will be used to the maximum to meet transportation requirements.

(2) Aircraft. Allocation of supporting aircraft will be made by this headquarters.

6. VISUAL AND SOUND SIGNALS

a. Use as required and prescribed by CEOI and unit SOP and as modified by battalion OPORD.

b. Subordinate units employ only those pyrotechnics specifically authorized by OPORD or CEOI.

7. ELECTRONIC WARFARE

a. Radio stations will not attempt to enter, jam, or otherwise interfere with unknown radio nets without prior approval of this headquarters.

b. Report (by a secure means) jamming or attempts to enter nets by unknown stations to the communications officer without delay. Give time, radio frequency, type of jamming, signal strength, readability, and identity (if obtainable) of interfering station.

Appendix C

Helicopterborne Unit Commander's Checklist

1. General

This list is designed to summarize the essential items that should be included in the planning phase of a helicopterborne operation by the HUC. The list should be referred to throughout the planning process to ensure that major planning steps are not omitted.

2. Action Upon Receipt of Orders

a. Analyze mission(s).

b. Determine specified and implied task(s) and objective(s).

c. Develop time schedule.

d. Obtain aircraft availability information from MC and/or AO.

e. Issue warning order.

3. Ground Tactical Plan

a. Choose, as appropriate, assault objectives.

b. Designate LZ(s) available for use. Consider distances from LZ(s) to objective(s).

c. Establish D-day and H-hour (time of assault).

d. Identify special tasks required to accomplish mission.

e. Means available to accomplish mission include—

(1) Organic troops (consider distance from present location to PZ).

(2) Aviation resources to include attack helicopters (establish liaison with MC and obtain initial information relative to support requirements from ground unit to include FARP support).

(3) Engineers.

(4) Fire support.

(a) Close air support.

(b) Artillery within range.

(c) Other indirect fire weapons (mortar and naval gunfire).

(d) Preparation fires for LZs (signals for lifting and/or shifting).

(e) Flight corridors.

(f) Air defense suppression.

(7) Control measures needed.

(8) Subsequent operations (for example, defense linkup, withdrawal) that may be conducted.

4. Intelligence Information and Requirements

a. Enemy locations to include air defense positions.

b. Commander's aerial recon of objective area (if practical).

c. Aerial reconnaissance (side-looking airborne radar [SLAR] aerial photos).

d. Sensor reports.

e. Terrain study.

f. Weather forcast.

g. Latest intelligence summary (INTSUM).

h. POW handling procedures.

i. Civilian control procedures.

j. PZ/LZ information.

k. Approach and retirement lane information.

5. Landing

a. Selection of primary and alternate LZ(s) (capacity).

b. LZ identification procedures for landing sites include—

(1) Colored smoke.

(2) Panels.

(3) Flares.

(4) Lights.

c. Use of recon/SRIG.

d. Landing formation(s).

e. Approach and departure directions.

f. LZ preparation fires to support landing plan and ground tactical plan include—

(1) Use of CAS, air defense suppression, and close-in fire support (CIFS).

(2) Use of indirect fire weapons.

(3) Use of attack helicopters.

(4) Use of EW.

g. Other fire support considerations include—

(1) Shifting of fires.

(2) Lifting of fires.

(3) SEADs.

6. Air Movement

a. Flight routes (primary-alternate-return) require the following data:

(1) Direction and distance to LZs.

(2) Checkpoints along route.

(3) Phase lines if used.

(4) Estimate time in route.

(5) Laagers (if used) to include location, mission, and security.

(6) Friendly air defense considerations.

(7) Enemy air defense intelligence.

b. Information to implement air movement includes—

(1) Units to be lifted.

(2) Number and types of lift helicopters allocated to each unit.

(3) Aviation units supporting unit.

(4) Lift off times.

(5) Routes.

(6) Unit LZs.

(7) H-hour (landing time of initial lift).

c. Alternate communications plan include—

(1) FM.

(2) UHF.

(3) VHF.

(4) Visual/audio signals.

(5) Aerial radio relay.

7. Loading

a. PZ assignment by unit (primary-alternate) (bump and/or straggler contingency plan).

b. Holding areas.

c. Routes from assembly areas to holding area to PZ(s).

d. Attack helicopter utilization (overwatch and security) includes—

(1) En route to PZ.

(2) While lift aircraft are in PZ.

(3) En route to LZ

(4) Recon of LZ; marking of LZ in absence of ITG.

8. Support Plans for Conduct of Helicopterborne Operations

a. Alternate plans and procedures due to weather (H-hour increment to delay operation).

b. Downed helicopter procedures include—

(1) Crew and passenger duties.

(2) Aircraft disposition instruction.

c. Rally points.

d. Escape and evasion instructions.

e. Laager sites.

f. Rules of engagement.

g. Deception plans that will be used.

h. Spare aircraft available.

i. Reconnaissance (air-ground) that will be conducted.

j. Straggler control procedures.

k. Reporting (en route, liftoff, touchdown, intelligence, and contact).

l. Aircraft disposition after assault.

m. Medical support and evacuation procedures.

9. Actions That Must be Completed

a. Warning orders.

b. Liaison officer (receive and dispatch).

c. Briefings (time and place).

d. Preparation of OPORD.

e. Issue OPORD (time and place).

10. Logistics Requirements

a. Class V resupply.

b. Feeding plan.

c. Weather.

d. MEDEVAC (call sign, frequency, location, and procedures).

e. Refueling (location of FARP, ammunition available).

11. Debriefing

a. Lessons learned.

(1) Ground units.

(2) Aviation units.

b. Actions taken for correction.

Appendix D

Air Mission Commander's or Air Officer's Checklist

1. General

This list is designed to summarize the essential items included in the planning phase of a helicopterborne operation by the air mission commander. The list is referred to throughout the planning process to ensure major items are not omitted.

2. Action Prior to Departure for Supported Unit

Meet attack helicopter and recon/SRIG representatives at prearranged site. Obtain briefing from designated helicopter unit operations officer to include:

a. Support Unit(s)

(1) Mission.

(2) Location.

(3) Contact officer.

(4) FM frequency.

(5) Call sign.

b. Mission

(1) Requirements for aerial reconnaissance.

(a) Utility helicopters.

(b) Attack helicopters.

(c) Other assets.

(2) Special mission requests.

(3) Number of aircraft, by type, that are required for the operation.

(4) Utility, observation, cargo, C^2 helicopters required.

(5) Attack helicopters required.

c. Planning Data for Aircraft Load for Each Type of Aircraft

(1) Number of troops _____; pounds of cargo _____.

(2) Number of recon available and time available.

(3) HST equipment available.

(4) Specific problem areas or requirements that may affect support of ground unit (FARP location and time of operation). (Estimated refueling time and refuel-rearm plan.)

(5) Obtain necessary equipment that will be required at or by supported unit. (Special attention to HST external load requirements.)

(a) Aircraft or vehicle.

(b) Maps, overlays, photographs.

(c) Radios, CEOI for exchange.

(d) Personal gear.

(e) Additional headsets for reconnaissance, if required.

(f) Slings, nets, or other HST equipment.

(6) Check with the HUC for special instructions.

3. Actions En Route

a. Establish and maintain communications.

b. Obtain status of fires and permission to enter area of operations.

4. Actions at Supported Unit Location

a. Report to supported commander, S-3, or AO.

b. Brief supported unit on number and type of aircraft available, aircraft load, and other essential information.

c. Obtain initial briefing on the following:

(1) Enemy situation.

(2) Friendly situation.

(3) Ground tactical plan (make map overlays).

d. Assist supported unit in planning the following:

(1) Movement to PZ for ground and aviation unit and control facilities.

(2) Loading.

(a) Location and selection of PZ.

(b) Special PZ marking procedures.

(c) Aircraft marking procedures.

(d) Landing formation and direction.

(e) Loads:

- Troops.
- Cargo.

(f) Communications control procedures.

(g) PZ control (obtain call sign and frequency).

(h) Manifesting.

(i) Prioritization of bump by aircraft.

(j) PZ and lift-off times.

e. Air Movement

(1) Flight route. Provide guidance and information relative to flight times.

(2) Formation. Select en route formation that gives the most control and is least vulnerable to enemy interference; provide guidance for selection of PZ and LZ formations.

(3) Altitude and speed.

(4) Overwatch and security plan for attack helicopters.

(5) Fire support plan en route.

(6) Air movement plan.

(7) Recon HST support (finalize).

f. Landing

(1) Touchdown times (in terms of H-hour).

(2) LZ locations and designations and locations.

(3) Size and description.

(4) LZ marking and procedures.

(5) Landing directions.

(6) Landing formations.

(7) Traffic pattern for subsequent lifts.

(8) Communications, control procedures, and use of recon.

g. LZ Preparatory and Suppressive Fires

(1) CAS (start time, duration, target and type of fuze, special instructions).

(2) Indirect fires (start time, duration, target and type of fuze, special instructions).

(3) Plan for attack helicopter unit's scheme of maneuver and plan for overwatch and security (start time, duration, special instruction, attack direction).

(4) Firing plan of debarking troops.

(5) Call signs and/or frequency signals for lifting and/or shifting support fires.

h. Refueling Requirements

(1) Location of FARP(s).

(2) Time required.

i. Aircraft Maintenance

(1) Downed aircraft procedures.

(2) Spare aircraft procedures.

5. Actions Prior to Departure From Supported Unit

a. Obtain copies of OPORD with overlays and annexes.

b. Confirm all times.

c. Last minute weather check.

(1) Mission procedures (delay increments).

(2) Alert procedures.

d. Debrief the commander.

6. Actions Upon Return to Aviation Unit

a. Inform unit commander.

b. Brief personnel, as appropriate, on all above information.

c. Maintain close liaison with support unit.

Appendix E

Pickup Zone and Landing Zone Operations

1. General

This appendix serves as a small unit (company and below) leader's guide for the safe, efficient, and tactically sound conduct of operations in and around PZs and LZs.

2. Selection and Marking

Small unit leaders should be proficient in the selection and marking of PZs and/or LZs and in the control of aircraft.

a. Tactical and Technical Considerations. (See chapter 3).

b. Marking PZs and LZs

(1) Day. A ground guide will mark the PZ or LZ for the lead aircraft by holding an M-16A2 over his head, by displaying a folded VS-17 chest panel high, or by other identifiable means.

(2) Night. The code letter Y (inverted Y) is used to mark the landing point of the lead aircraft at night. Chemical light sticks or beanbag lights may be used to maintain light discipline. (See fig. E-1.)

(3) When more than one aircraft will be landing in the same PZ or LZ, there will be an additional light for each aircraft. For observation, utility, and attack aircraft, each additional aircraft landing point will be marked with a single light emplaced at the exact point that each aircraft is to land. For cargo aircraft, each additional landing point will be marked with two lights. The two lights will be placed 10 meters apart and will be aligned in the aircraft direction of flight.

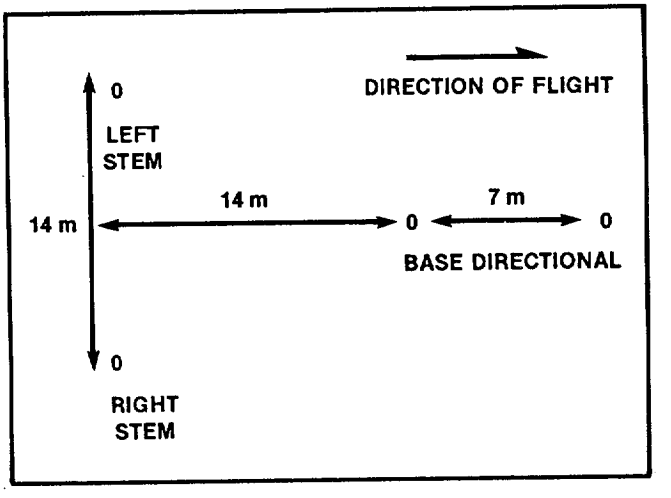


Figure E-1. Inverted Y.

(4) Obstacles. These include any obstruction to flight which might interfere with aircraft operation on the ground (trees, stumps, rocks) and cannot be reduced. During daylight, the aircrew is responsible for avoiding obstacles on the PZ or LZ. For night and limited visibility operations, all obstacles will be marked with red lights. The following criteria will be used in marking obstacles:

(a) If the obstacle is on the aircraft approach route, both the near and far sides of the obstacle will be marked.

(b) If the obstacle is on the aircraft departure route, the near side of the obstacle will be marked.

(c) If the obstacle protrudes into the PZ or LZ, but is not on the flight route of the aircraft, the near side of the obstacle will be marked.

(d) Large obstacles on the approach route will be marked by circling the obstacle with red lights.

c. Control of Aircraft. Approaching aircraft are controlled by the use of arm-and-hand signals to transmit terminal guidance for landing. The signalman is positioned to the right front of the aircraft where he can best be seen by the pilot. Signals at night are given by using lighted batons or flashlights in each hand. When using flashlights, care will be taken to avoid blinding the pilot. Batons and flashlights will remain lighted at all times when signaling. The speed of arm movement indicates the desired speed of aircraft compliance with the signal.

Section I. Assembly and Objective Areas

1. General

Prior to arrival of the aircraft, the PZ must be secured, PZ control party positioned, and the troops and equipment positioned in a unit assembly area.

a. Occupation of Unit Assembly Area. Unit leaders should accomplish the following:

(1) Maintain all-round security of the assembly area.

(2) Maintain communications.

(3) Organize troops and equipment into loads and lifts in accordance with the unit air movement plan.

(4) Conduct safety briefing and equipment check of troops.

(5) Establish priority of loading for each man and identify bump personnel.

(6) Brief on the location of the straggler control points.

b. Movement to and Occupation of Holding Area. Linkup guides from the PZ control party will meet with designated units in the unit assembly area and coordinate movement of loads to a release point. As loads arrive at the release point, load guides will move each load to its assigned load assembly area. (To reduce the number of personnel required, the same guide may be used to move the unit from the unit assembly area to the load assembly area.) If part of a larger helicopterborne assault, no more than three loads should be located in the load assembly area at one time. Noise and light discipline will be maintained throughout the entire movement in order to maintain the security of the PZ. Additionally, no personnel should be allowed on the PZ unless loading aircraft, rigging vehicles for sling load, or directed by PZ control. While remaining in load order, each Marine is assigned a security (firing) position by the heliteam commander or load leader and emplaced in the prone position, weapon at the ready and facing outboard (away from PZ) to provide immediate close-in security.

(1) An example of a large, one-sided PZ is depicted in figure E-2.

(2) An example of a small two-sided PZ with unit and load assembly areas is depicted in figure E-3.

(3) While in the load assembly area, units should adhere to the following principles for loading the aircraft.

(a) Maintain tactical integrity by keeping fire teams and squads intact.

(b) Maintain self-sufficiency by loading a weapon and its ammunition on the same aircraft.

(c) Ensure key men, weapons, and equipment are cross-loaded among aircraft to prevent the loss of control, or all of a particular asset, if an aircraft is lost.

(d) Prior to loading, ensure all troop gear is tied down and checked; short antennas placed in radios, folded down, and secure.

(e) Squad and team leaders check the equipment of their men to ensure it is complete and operational.

(f) Radios on and communications check performed (unless directed otherwise).

(g) Specific aircraft seats are assigned to each man.

c. PZ Closure. During platoon helicopterborne operations, the platoon sergeant is responsible for ensuring all personnel and equipment are loaded (clear the PZ) and security is maintained.

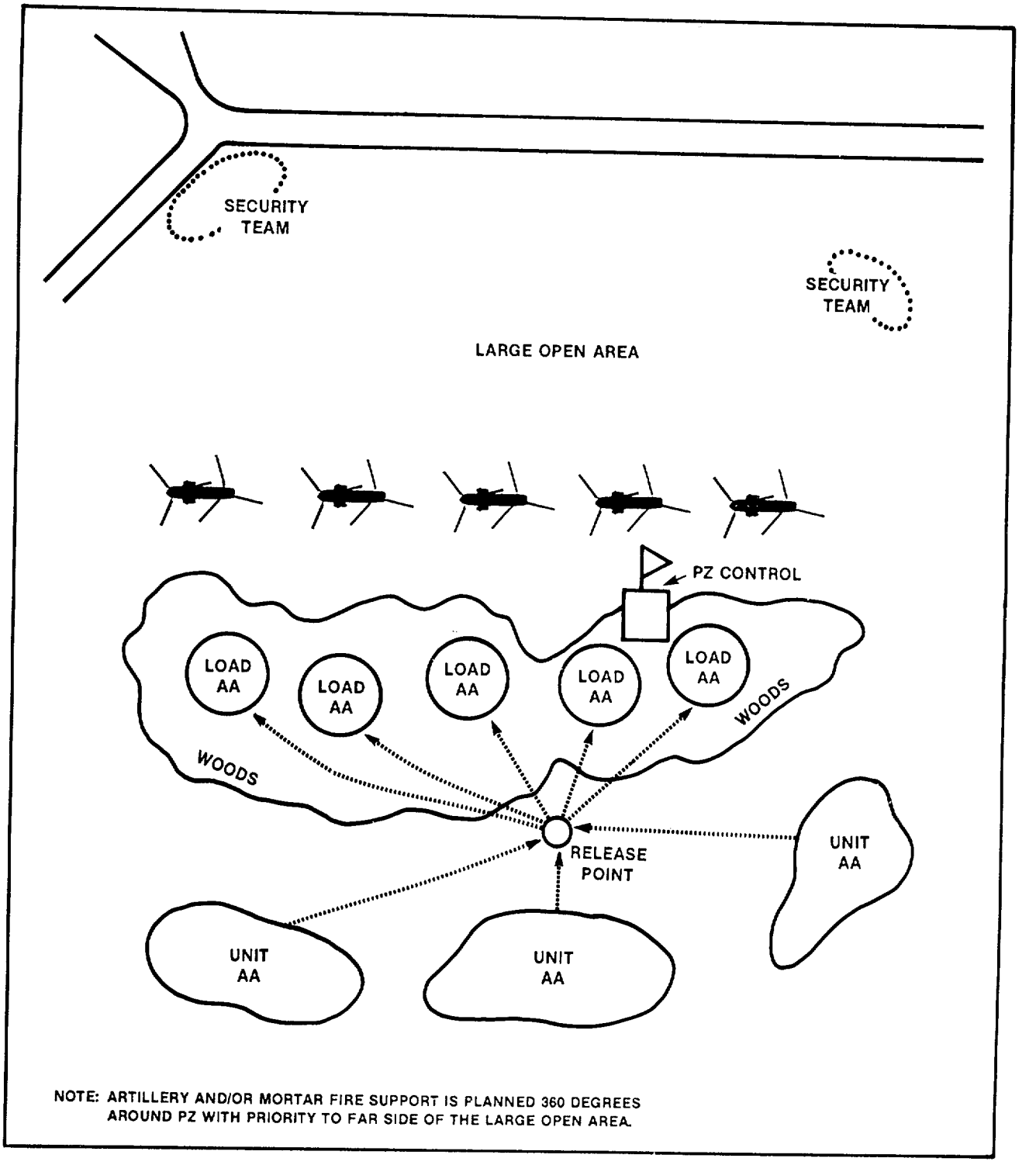


Figure E-2. Example of a Large, One-Sided Pickup Zone.

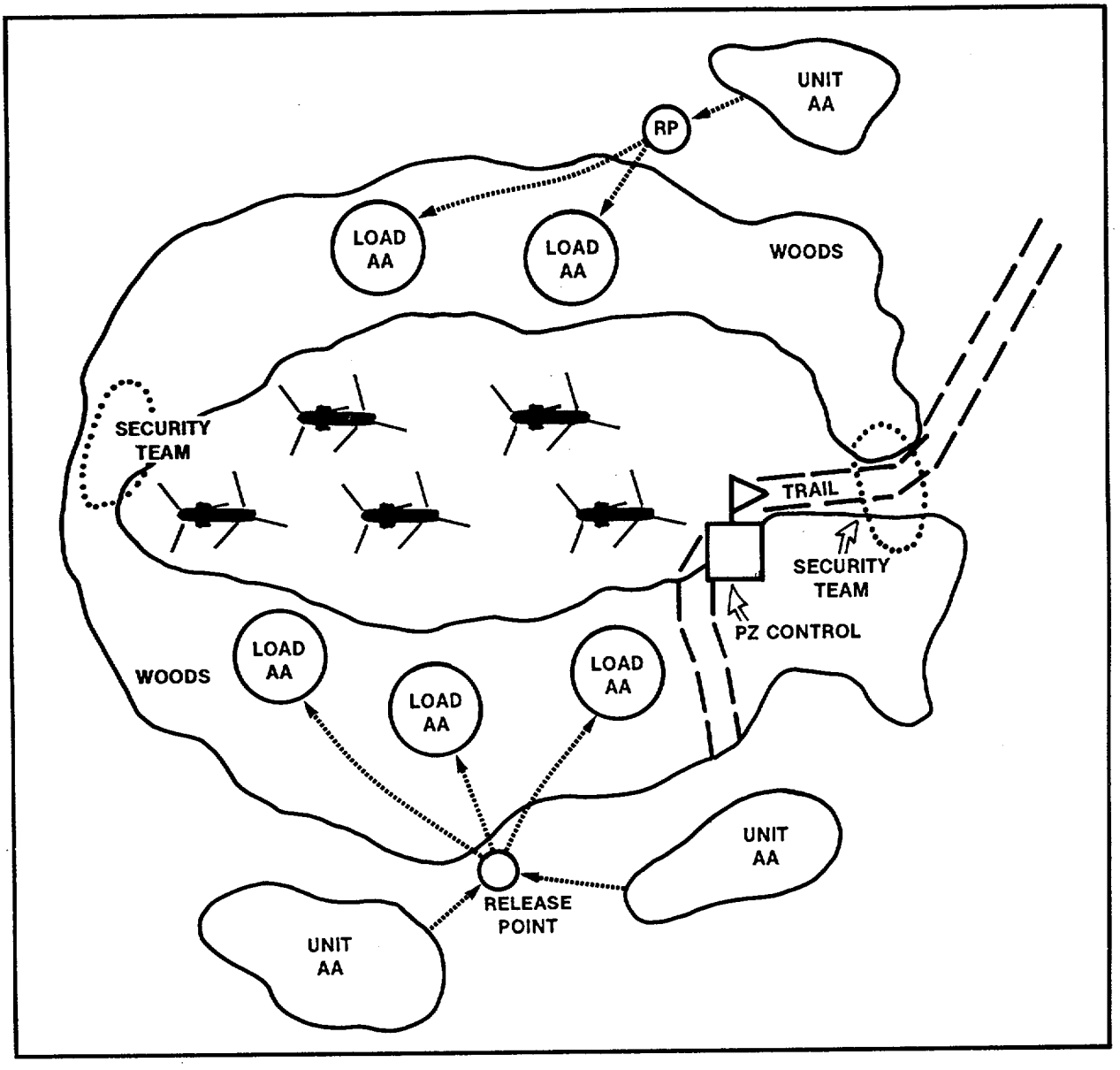


Figure E-3. Example of a Small Two-Sided Pickup Zone With Unit and Load Assembly Areas.

(1) Single Lift. The platoon sergeant positions himself at the last aircraft and collects bumped men, if required. He will be the last man to load the aircraft. Once on the aircraft, the platoon sergeant will notify the crew chief and/or MC (using the troop commander's radio handset) that all personnel and equipment are loaded. Close-in security will be provided by the aircraft door gunners.

(2) Multiple Lift. The duties of the platoon sergeant are the same as for a single lift. During a multiple lift, the security teams will maintain security of the PZ and be the last element to

depart with the platoon sergeant. Depending on the initial location(s) of the security teams, repositioning closer to the PZ may be necessary. Whenever possible, the aircraft will land as close to the security team positions as possible to enhance security and minimize the movement required by the teams.

d. Helicopter Loading Sequence

(1) Heliteam leader initiates movement once the aircraft has landed.

(2) Heliteam moves to the aircraft in file with the heliteam commander leading the file.

(3) Heliteam commander should—

(a) Ensure all personnel know which aircraft and which position to load.

(b) Ensure all personnel wear or carry packs on the aircraft.

(c) Notify the crew chief when all heliteam members are on board and are ready for liftoff.

(4) All personnel will buckle up as soon as they are seated in their assigned seats. The heliteam leader will always sit in the left front seat unless a platoon commander or company commander is on the same aircraft.

(5) The heliteam leader will report to the pilot and answer any questions the pilot may have, utilizing the aircraft intercommunication (troop commander's) handset.

2. Landing Zone Operations

Just as there is a priority of work for defensive operations, there is a priority of actions upon landing in an LZ.

a. Unloading. Unloading of the aircraft does not begin until directed by the crew chief or pilot.

(1) Once the aircraft has landed, personnel will unbuckle seatbelts and exit aircraft as fast as possible with all equipment.

(2) Prior to leaving the aircraft, the heliteam leader will obtain the landing direction from the pilot if not determined during the approach into the LZ. This will aid in orientation to the LZ, particularly at night.

(3) Upon exiting the aircraft, the heliteam will move to its designated location within the LZ.

b. Immediate Action on Hot LZ. If the decision is made to use a hot LZ or contact is made upon landing, troops quickly dismount and move 15 to 20 meters away from the aircraft and immediately return the enemy's fire to enable the aircraft to depart the LZ.

(1) If the contact is similar to a far ambush, troops will fire and maneuver off the LZ to the closest side offering cover and concealment.

(2) If troops are engaged from nearby enemy positions, they treat it as a near ambush by immediately returning fire. Marines who consider themselves in the kill zone may assault the enemy position(s) or attempt to get out of the kill zone. Marines not in the kill zone will provide supporting fire to support the movement of Marines in the kill zone.

(3) The squad or platoon leader will call for fire support if it is available.

(4) Once disengaged from the enemy force, the squad or platoon leader will move the unit to a covered and concealed position, account for personnel and equipment, and assess the situation as to whether or not the unit can continue the mission.

c. Load Assembly Area on Cold LZ. Upon unloading from the aircraft, the heliteam leader will move the load to its predetermined locations using traveling overwatch movement techniques. All troops will move at a fast pace to the nearest concealed position. Once at the concealed assembly point, the heliteam leader will make a quick count of personnel and equipment and then proceed with the mission.

Section II. Duties of Key Personnel

1. General

To ensure that a helicopterborne operation is executed in an effective manner, key personnel are designated to perform specific duties. This section will address the duties and responsibilities of unit leaders during helicopterborne operations and discuss the duties and responsibilities of key personnel in the PZ control party.

2. Unit Leader Duties and Responsibilities for Platoon Helicopterborne Operations

a. Platoon commander—

(1) Has overall responsibility for the helicopterborne operation. May act as the PZCO.

(2) Plans the operation.

(3) Briefs subordinate leaders.

(4) Issues OPORD.

(5) Conducts rehearsals.

(6) Rides in the air mission commander's aircraft to ensure better command, control, and communications.

b. Platoon sergeant—

(1) Sets up the PZ and supervises the marking of the PZ.

(2) Briefs all heliteam commanders.

(3) Supervises all activity in the PZ:

(a) PZ security.

(b) Movement of troops and equipment.

(c) Placement of loads and sling loads.

(4) Devises and disseminates the bump plan.

(5) Rides in the last aircraft for control purposes and will ensure that the PZ is cleared.

c. Heliteam leader—

(1) Briefs his personnel on their respective tasks and positions inside the aircraft.

(2) Assigns respective areas of security to his personnel. Ensures that each Marine goes to his proper place.

(3) Supervises the loading of his heliteam into the aircraft to ensure that all personnel assume assigned positions and have buckled their seatbelts.

(4) Keeps current on location by use of his map and communication with the aircraft crew, during movement.

(5) Ensures, upon landing, that all personnel exit the aircraft quickly and move to designated positions within the LZ.

3. Pickup Zone Control Party

The PZ control party is responsible for the organization, control, and all coordinated operation in the PZ. Keeping in mind the unit leader's duties and responsibilities previously stated, a PZ control party for a platoon helicopterborne operation could be organized as depicted below:

a. PZ control officer is a rifle platoon commander.

b. PZ control noncommissioned officer in charge is a platoon sergeant or guide.

c. Radio Operator With Three Radios. One radio would monitor the aviation net for communication with the aircraft. The second radio would be used for communication with the platoon's

subordinate units. The third would operate on the company command net.

d. Load Linkup Guides. There is one per heliteam or load. Their primary duties are to assist in link up and movement of loads from the unit assembly area to the load assembly area. For platoon-sized helicopterborne operations, these guides should come from the same heliteam squad they are assigned to.

e. Lead aircraft signalman is responsible for visual landing guidance for the lead aircraft. This signalman could come from the heliteam or squad loading on the lead aircraft.

f. Hookup Sending Team. A hookup team is responsible for the load preparation and rigging. The hookup team consists of a team supervisor/safety observer, an inside director, an outside director, a static discharge man, and two hookup men to hook up the load. A simple sling load may only require two Marines. A complex load may require six Marines. During complex external lifts, the platoon may be provided with Marines from battalion HST to supervise the helicopter support team operations of the platoon. HST operations are explained in detail in appendix F.

Section III. Helicopterborne Operations Communications

1. General

The purpose of this section is to describe communications in helicopterborne operations.

2. Communications

a. During establishment and operation of a platoon sized PZ, communications must be maintained with the aviation elements to control the aircraft. Communications are also required to report to the company headquarters and to control security teams.

b. During air movement, radio listening silence will be maintained on the company and platoon radio nets unless directed otherwise.

(1) On board the aircraft, all leaders will communicate with the troops using predetermined arm-and-hand signals or stating the message information on a piece of paper or event map.

(2) Communication with the aircraft crew is accomplished by using the troop crew chief's handset.

3. Landing Zone Communications

Immediately after unloading the aircraft, the radio operators will check radios to ensure they are reconfigured as necessary. Radio communications on the LZ will be on the command frequency. Arm-and-hand signals will be utilized along with messengers to improve noise discipline.

4. Fire Support Communications

The rifle platoon makes requests for fire support through the rifle company headquarters.

Section IV. Sling Load Hookup Operations

1. General

In small operations, company and below, six Marines are normally used as the ground crew in conducting sling load tasks in the PZ and LZ: a team supervisor/safety observer, an inside director, an outside director, a static discharge man, and two hookup men. Battalion HST should provide the hookup team and equipment when needed by the platoon.

2. Static Discharge Equipment

The static electricity generated by helicopters during flight can be fatal to Marines conducting external loading and unloading operations. The Static Discharge Grounding Wand (NSN 1670-01-194-0926) is designed to protect the users from static electrical shock during helicopter external loading operations. It is important that all Marines conducting external load functions be trained in proper procedures and familiar with safety requirements. Marines should be trained in HST operations and external load procedures by Landing Support Company, Landing Support Battalion, FSSG. The equipment required to conduct HST operations, including external loading, must be drawn from landing support company, prior to attempting external loading and unloading. More information on HST operations is found in appendix F and Operational Handbook 5-3A.

3. Protective Equipment

All ground crew personnel will wear the following protective equipment:

- Helmet.
- Protective mask or dust goggles.
- Earplugs.
- Gloves.
- Utility shirt with sleeves rolled down.

4. Ground Crew Emergency Procedures

In an emergency, the ground crew will move to the helicopter's right and the helicopter will move to its left.

a. The signalman will move out of the helicopter's flight path by moving to the helicopter's right.

b. The hookup team will work on the right side of the load in order to move out to the right of the aircraft in case of emergencies.

Section V. Safety Briefing

1. General

Prior to a helicopterborne operation, the unit chain of command will give a safety briefing to all personnel. All leaders will enforce strict safety measures when working with helicopters.

2. Safety Briefing Checklist

Include, as a minimum, the following:

a. Identification tags and earplugs will be worn at all times when near or in an aircraft.

b. Helmets with chinstraps fastened will be worn at all times.

c. Helicopter safety measures for avoidance of tail rotors and proper loading and unloading.

d. M-16 rifles will be carried with the muzzle pointed DOWNWARD, pistol grip forward, bolt closed, magazine in the weapon, and weapon on SAFE. Rounds will not be chambered; bayonets will not be fixed.

e. Hand grenades will be secured.

f. Short antennas will be bent completely down and long antennas will be tied down when using radios in proximity of helicopters.

g. Seatbelts are fastened upon entering the helicopter and left buckled until the crew chief signals to exit the aircraft.

h. In the event of a forced landing, all personnel will lean forward with their heads down until the aircraft comes to rest. No one will exit the aircraft until the main rotor has completely stopped.

Appendix F

Helicopter Support Team Operations

1. General

An HST is a group of Marines task-organized and equipped to perform those functions required to establish and operate a helicopter PZ and/or LZ.

2. Mission

The HST provides support for the unit conducting a helicopterborne operation by—

- Facilitating the pickup, movement, and landing of helicopterborne forces, equipment, and supplies within PZs and LZs.
- Assisting in the evacuation of casualties and POWs from the LZ.

3. Organization

a. Helicopter Support Team. The HST is a task organization composed of personnel and equipment of the helicopterborne force and the supporting helicopter unit, with augmentation from other units as required. Normally, the HST is employed in each PZ and LZ to provide support to units departing and landing in those zones. Its organization is determined by the contemplated operation; there is no standard organization for an HST. The nucleus for the team may come from the GCE or a landing support company. Normally, when a CSS buildup is planned in the vicinity of the LZ, the nucleus of the HST is drawn from the landing support company. With no buildup planned, the nucleus comes from the service elements of the helicopterborne unit. Landing support units retain control of cargo slings for accountability and maintenance. During peacetime, landing support units provide training to combat and CS units so that external lifts can be accomplished by the helicopterborne units which will not require a CSS buildup. For example, displacement by helicopter external lift of howitzers or ship-to-shore external lift of light armored vehicles should be accomplished by the artillery or LAI units respectively. Without a CSS buildup, assistance from the landing support units would consist of a small detachment for expertise and the appropriate cargo slings. The helicopter terminal guidance for the initial assault waves may be provided by division or force reconnaissance units or the detachment SRIG with the MAGTF, when terminal guidance is required.

An HST will normally consist of a PZ control team and a LZ control team. The PZ control team is easier to organize than the LZ control team because it establishes operations on familiar terrain, near the unit's assembly area, in a secure area. LZ control team operations are more difficult to organize because much less is known about the LZ, the LZ is a significant distance away from the supported unit, and personnel and equipment must be phased into the LZ to establish HST operations. For more information on PZ control, see appendix E and chapter 3.

LZ control in HST operations will normally consist of an advance party, headquarters, helicopter control element, and LZ platoon as shown in figure F-1. The functions of each of these elements are described in detail in this section. The HST may be augmented by additional personnel and equipment from the CSSE. Other augmentation may be provided by the GCE and the ACE.

b. Advance Party. The advance party contains personnel from all elements of the HST. When the HST lands, personnel of the advance party

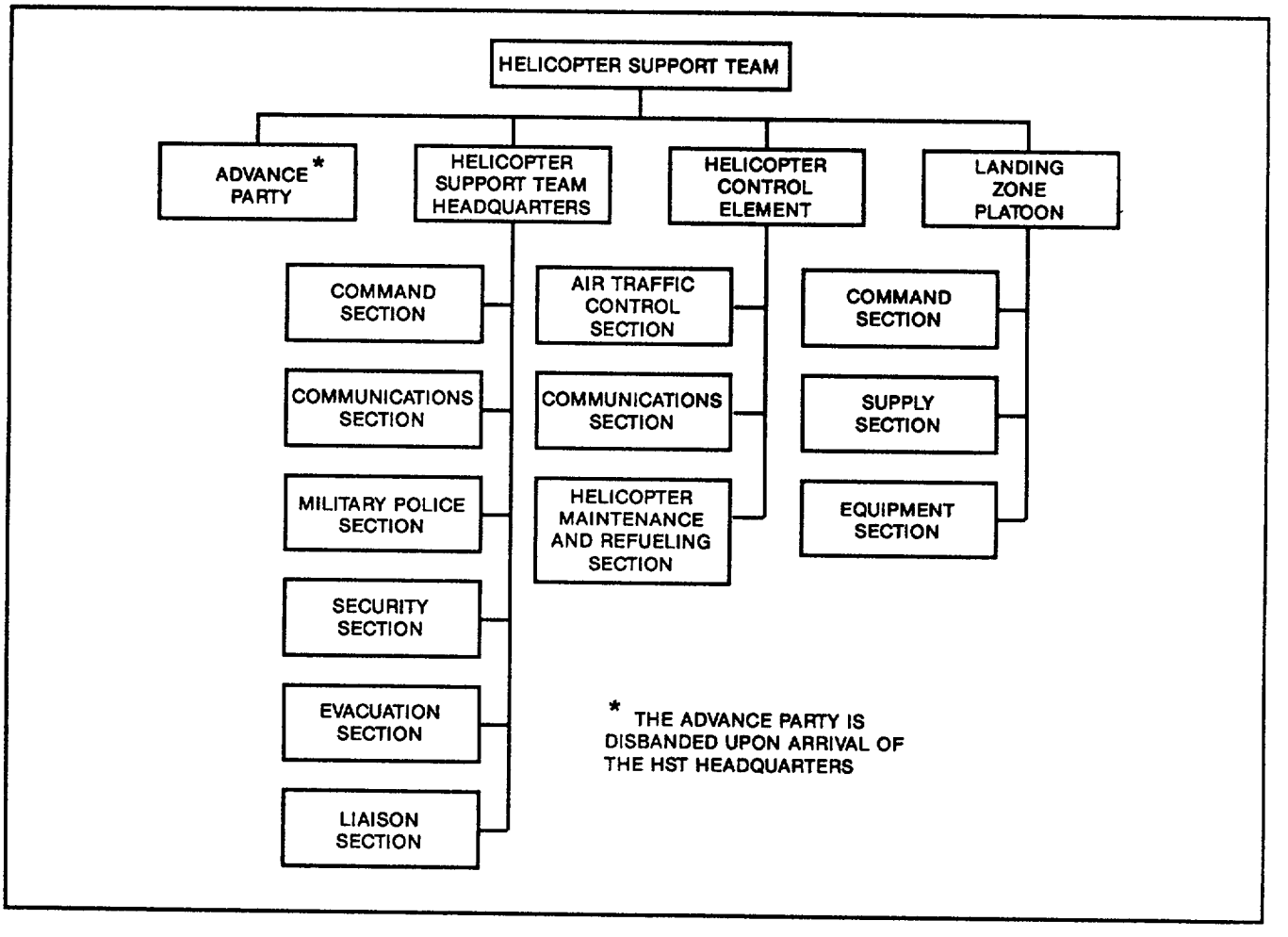


Figure F-1. Helicopter Support Team.

revert to their parent element. The advance party contains personnel for command, reconnaissance, communications, and LZ control. It numbers about 8 to 10 men with hand-carried equipment. The reconnaissance personnel reconnoiter positions for the various sites to be located within the LZ. Communications personnel provide immediate communications between the helicopterborne unit, PZ, LZ, MAGTF commander, CS and CSS units. LZ control personnel control the helicopters operating within the LZ.

c. Helicopter Support Team Headquarters. The headquarters element comes from the service of the infantry battalion. The headquarters also provides the LZ platoon. It consists of the following:

- A command section provided by the platoon headquarters, augmented as required.
- A communications section provided by the communications platoon of the infantry battalion or the communications platoon, headquarters and service company, landing support company, landing support battalion.
- A military police section consisting of augmentation personnel from the military police company, division headquarters battalion or headquarters and service battalion, FSSG.
- A security section consisting of augmentation personnel provides for internal security of combat service support installations established by the HST.

- An evacuation section provided by the medical section of the infantry battalion or from the medical battalion, FSSG.
- A liaison section consisting of personnel from the HST normally attached to the headquarters of the tactical unit they support.

d. Helicopter Control Element. The HCE, in large scale helicopterborne operations requiring a significant logistical buildup, consists of an LZCT provided by the ACE commander and may include personnel to provide helicopter refueling and emergency maintenance. In small scale helicopterborne operations, not requiring a logistical buildup, the HCE is comprised of personnel from the supported unit and/or landing support battalion. It is generally organized into three sections: air traffic control, communications, and helicopter maintenance and refueling. The control element establishes and operates electronic and visual NAVAIDs to guide aircraft, and it directs and controls helicopter operations within the LZ.

e. Landing Zone Platoon. Personnel for the LZ platoon are provided by the supported infantry unit with augmentation from the landing support company as necessary. The LZ platoon is organized into command, supply, and equipment sections. Personnel and equipment for the equipment section are provided by the CSSE as required. For more information on the LZ platoon, see FMFM 4-3, *Landing Support Operations.*

4. Tasks

Since an HST is task-organized, it may perform any number of tasks depending on the mission on the unit they are assigned to support. The limit of their ability to perform any designated task depends on the personnel and equipment made available to them. The HST performs functions within PZ and LZ areas which enable the supported unit to efficiently move personnel, equipment, and supplies into zones, and load/unload and control aircraft to enhance the effects of the helicopterborne operation. An HST is expected to accomplish the following tasks within PZ and LZ areas:

- Prepare, maintain, and mark zones, sites, and points.
- Set up wind direction indicators.
- Establish and maintain required communications.
- Reconnoiter and select areas adjacent to landing sites for supply dumps and other CSS activities, HST command post, casualty evacuation stations, and defensive positions for security of CSS activities.
- Direct and control helicopter operations within the zone and support helicopter units landing in the zone.
- Unload and load helicopters.
- Load cargo nets, pallets, and casualties for the return trip.
- Establish dumps and provide for their security.
- Issue supplies to using units.
- Maintain necessary records of supplies received, issued, and available.
- Provide and install means of marking unloading sites and avenues of approach for night operations.
- Participate in local security as required.
- Provide personnel and vehicle ground control.
- Maintain a situation map and information center.
- Provide sites for emergency helicopter repair and refueling facilities.
- Coordinate operations with other HSTs.
- Maintain liaison with troops being supported.
- Plan and organize LZ support areas.
- Evacuate POWs.
- Rig/derig all loads in or out of the PZs and LZs.
- Provide fire-fighting duties for landings and takeoffs.

NOTE: The sum total of all tasks is to provide a rapid, smooth, effective movement of Marines and material from the supported unit's assembly area to the supported unit's LZ; enabling the supported unit to land and achieve their mission as economically as possible. For more on HST operations and a complete discussion of helicopter external cargo loading and unloading see OH 5-3A, *Helicopter External Cargo Loading.*

Appendix G

Helicopterborne Training

Section I. Training

1. General

Helicopterborne training must be integrated into unit programs on a routine basis to develop capability at each level from squad through battalion.

2. Objectives

Commanders are responsible for their unit's helicopterborne training. The objective is for units to conduct helicopterborne operations with speed, precision, and confidence. Infantry units, as well as other combat, CS, and CSS units, should routinely receive such training.

3. Small-Unit Tactics

Standard infantry small-unit tactics and techniques are the basis for the ground phase of helicopterborne operations. The commander ensures that all units are proficient in these tactics. He then combines this training with the other phases peculiar to helicopterborne operations: staging, loading, air movement, landing, and unloading. He emphasizes rapid loading and unloading of aircraft, as well as quickly organizing maneuver elements in the LZ to take advantage of the speed and mobility of helicopterborne operations.

4. Small-Unit Leader Training

The commander trains his small-unit leaders to operate independent of their parent organization to accomplish their part of the overall mission. Additionally, small-unit leaders must be able to take charge in the absence of their seniors. The speed and complex nature of helicopterborne operations dictates the use of SOPs and battle drills.

5. Mobility

The commander trains his units to travel light, consistent with the mission, taking only necessary equipment and supplies.

6. SOP and Training

a. Procedures for conducting helicopterborne operations are included in unit SOPs. While SOPs include routine actions that personnel might have to complete during an operation, they must also include procedures for downed aircraft, bump plans, or other conditions that may occur during the conduct of operations.

b. The training program includes sufficient training to ensure that personnel are familiar with, and proficient in, the procedures contained in the SOP.

c. During training, the information in the SOP is evaluated for completeness, simplicity, and applicability. Procedures are refined as necessary.

7. Land Navigation

Land navigation proficiency by all leaders is critical to success. Leaders must learn to locate positions, navigate to specific points, and use the terrain to their advantage.

8. Artillery Support Training Considerations

a. Supporting artillery units train with the maneuver unit. They become familiar with the maneuver unit's SOP and teach selected personnel of maneuver units how to plan for, employ, call for, and adjust artillery and mortar fires. This makes it imperative that the habitual working relationship between the fire support and maneuver units be maintained to ensure mutual understanding of operational requirements, capabilities, and limitations. That relationship is one in which the same fire support units support a particular maneuver unit for each operation.

b. To support helicopterborne operations, the artillery must be proficient in sling loading operations and the planning required to execute PZ and/or LZ operations. This planning requires artillery leaders to coordinate closely with the maneuver unit that normally controls the lift assets and the aviation units involved. HST and external load/unload techniques require frequent training for hookup teams, helicopter crews, zone control personnel, and communicators. A detailed discussion of external loading and unloading procedures is contained in OH 5-3A.

9. Aviation Units

a. Aviation unit commanders assist ground unit commanders in the development of training in the technical aspects of combined aviation and ground unit training. They also ensure that their units are technically proficient.

b. The habitual working relationship between the maneuver and aviation units is maintained whenever possible.

10. Infantry and Aviation

Ground and aviation units must train together and be completely familiar with the complete MAGTF concept. They must train in all types of weather and reduced visibility. Both elements refine and develop compatible SOPs.

Section II. Developing Helicopterborne Training Programs

1. General

A training program for helicopterborne operations should include those critical, individual collective skills necessary for accomplishment of the warfighting mission. Unit training should concentrate in areas where weaknesses exist.

2. Conduct of Training

a. Helicopterborne training begins by familiarizing individuals in aircraft procedures to include loading and unloading, crash procedures, and aircraft safety. Proficiency in these provides a foundation for collective training of ground and aviation units.

b. Collective training should include battle drills on loading and unloading as well as organizing into combat formations on the LZ. This will allow units to maximize the speed and mobility of helicopterborne operations.

3. Use of Mockups

a. Constraints on helicopter flight hours will limit the amount of flight time available for training. Therefore, much of the individual and small-unit training will have to be accomplished using aircraft mockups. Plywood and other materials can be used to build the mockups. They are relatively inexpensive. They can be used to train individuals on how to approach a helicopter, how to get on it, and how to get off. Helicopterborne battle drill can be taught by using mockups. CS Marines can be trained to load weapons, equipment, supplies, and ammunition on helicopters by practicing on mockups.

b. If the unit has a local training area of adequate size, several mockups can be used to practice battle drill to include the way the unit should offload aircraft in the LZ. The mockups can be placed in different patterns to simulate different landing formations. Three CH-46 mockups should be sufficient for platoon training.

4. Individual and Unit Training

The following subjects should be included in appropriate phases of individual and unit training.

a. Ground Units

(1) Subjects required to attain proficiency in ground combat skills and tactics.

(2) SOP battle drills.

(3) Physical and psychological preparedness.

(4) Methods and procedures for control and guidance of aircraft.

(5) Safety procedures in and around aircraft.

(6) Control and adjustment of supporting fires.

(7) Subjects required to attain proficiency in preparing internal and external aircraft loads.

(8) Practical experience in land and aerial navigation.

(9) Employment of attack helicopter units.

(10) Heliteam commander's duties.

(11) Helicopter rope suspension training (HRST).

(12) Downed aircraft procedures.

(13) LZ and PZ selection.

(14) LZ and PZ control.

(15) CS and CSS requirements and techniques.

b. Aviation Units

(1) Operations planning.

(2) Nap-of-earth flying techniques and navigation.

(3) Formation flying.

(4) Marginal weather and reduced visibility flying techniques.

(5) Camouflage and security of aircraft.

(6) Employment of aerial weapon systems.

(7) Aircraft maintenance in a combat field environment.

(8) Unit control of aircraft and air traffic.

(9) Initial terminal guidance procedures and techniques.

(10) Flight operations in confined areas with maximum loads.

(11) Operations with external loads.

(12) Aerial reconnaissance and security techniques.

(13) Battle drills.

c. Subjects Common to Aviation and Ground Units

(1) Threat organizations and doctrine.

(2) Recognition of threat vehicles and anti-aircraft weapons and knowledge of their capabilities.

(3) Conduct of liaison and coordination.

(4) Forward refueling techniques.

(5) Training in defense against NBC weapons.

(6) Signal security, discipline, and electronic countermeasures.

(7) Medical evacuation procedures.

(8) Procedures for aerial resupply.

(9) Training in helicopterborne SOPs.

5. Preparation

Training time and resources must be used efficiently. Each element of the unit should be prepared to do its part before joining support units for combined exercises. Squad and platoons should be trained in the following:

- Helicopterborne battle drill.
- Preparation of internal and external loads.

6. Staff Training

Staffs of ground and aviation elements must be trained in planning and conducting helicopterborne operations with emphasis on the following:

- Capabilities and limitations of helicopterborne operations.
- Command and staff relationships in the MAGTF.
- Development of plans using the reverse planning sequence.
- The MAGTF rapid planning process.
- Fire support means and control, and fire support planning for helicopterborne operations.
- Logistical procedures and requirements for helicopterborne operations.
- Preparation of sequenced ground and air movement plans.

Appendix H

Helicopter Characteristics

1. General

a. This appendix discusses the characteristics of USMC aircraft.

b. To efficiently load an HTF aboard helicopters, ground commanders and staffs must know the exact composition of the force, the essential characteristics of the types of helicopters to be used for the operation, and the methods of computing aircraft requirements.

c. Maximum aircraft loads are affected by altitude and temperature and will differ widely according to topography and climatic conditions common to specific zones or areas of military operations. Loads will further vary based on the location of, approaches to, and exits from LZs; pilot proficiency; aviation unit SOP; type of engine in the aircraft; and age of both aircraft and aircraft engine. Therefore, two identical aircraft may not be able to pick up and carry identical loads.

2. References

a. NWP 55-9-ASH, Volume I, (Rev. E) (NAVAIR 01-1 ASH-1T)/FMFM 5-3, *Assault Support Helicopter Tactical Manual*, provides detailed characteristics of USMC aircraft, technical data, and guidance for computing aircraft requirements.

b. JCS Pub 3-02.1 provides information and examples of detailed airloading and air movement forms. The same air movement forms common to amphibious operations can be used for subsequent operations ashore when such movement documentation is essential in planning and operations.

3. Aircraft Availability

a. Aircraft availability is *the overriding consideration* in helicopterborne operations. It is directly influenced by the adequacy and efficiency of maintenance and supply activities and aircraft utilization and scheduling procedures, as well as by the distance of support units from the operating units.

b. Both the support and supported commanders should be aware that everyday use, over an extended period, of all available aircraft will result in a reduced mission availability rate for future operations. In the course of sustained operations, aircraft maintenance must be carefully considered and programmed so that heavy flying requirements will not cause a continual decrease in aircraft availability.

c. Supported unit commanders, staffs, and logistical planners must conserve the use of available aircraft by—

(1) Establishing acceptable availability rates prior to operational commitment.

(2) Establishing FARPs to eliminate flying hours expended for those purposes.

(3) Utilizing surface means of transportation for logistical support whenever possible.

(4) Timely and coordinated logistical planning to ensure full utilization of all aircraft sorties and to avoid duplication of effort.

4. Capabilities and Limitations of USMC Helicopters

a. Capabilities

(1) Under normal conditions, helicopters can ascend and descend at steep angles, a capability which enables them to operate from confined and unimproved areas.

(2) Troops and their combat equipment can be unloaded from a helicopter hovering a short distance above the ground with troop ladders and rappelling means, or if they can hover low enough, the troops may jump to the ground. The troop ladder can also be used to load personnel when the helicopter cannot land.

(3) Cargo can be transported as an external load and delivered to areas inaccessible to other types of aircraft or to ground transportation.

(4) Because of a wide speed range and high maneuverability at slow speeds, helicopters can fly safely and efficiently at a low altitude, using terrain and trees for cover and concealment.

(5) Their ability to fly at high or low altitudes and to decelerate rapidly, combined with their capacity for slow forward speed and nearly vertical landing, enables helicopters to operate under marginal weather conditions.

(6) Helicopters can land on the objective area in a tactical formation, LZ(s) permitting.

(7) Night and/or limited visibility landings and lift-offs can be made with a minimum of light.

(8) Helicopters flying at low levels are capable of achieving surprise, deceiving the enemy at the LZ(s), and employing shock effect through the use of suppressive fires.

(9) Engine and rotor noise may deceive the enemy as to the direction of approach and intended flight path.

b. Limitations

(1) The high fuel consumption rate of helicopters imposes limitations on range and aircraft load. Helicopters may reduce fuel load to permit an increased aircraft load. However, reducing the fuel load reduces the range and flexibility factors, which must be considered in planning.

(2) Weight and balance affect flight control. Loads must be properly distributed to keep the center of gravity within allowable limits.

(3) Hail, sleet, icing, heavy rains, and gusty winds (30 knots or more) will limit or preclude use of helicopters.

(4) Engine and rotor noise may compromise secrecy.

(5) Aviator fatigue requires greater consideration in the operation of rotary wing aircraft than in the operation of fixed-wing aircraft.

(6) The load carrying capability of helicopters decreases with increases of altitude, humidity, and temperature. This limitation may be compensated for through reduction of fuel load.

(7) Crosswinds may affect the selection of the direction of landing and lift off.

5. Characteristics of USMC Helicopters

UH-1

Primary Mission:	Utility Transport
Alternate Mission:	Command & Control, CIFS, FSC MEDEVAC, Special Operations
Crew Configuration:	2 Pilots, 1 Crew Chief, 1 Gunner
Max Speed (combat configured):	110 knots
Max Endurance (combat configured):	2 hours 30 minutes
Combat Radius:	100 nmi
Air Refuelable:	No (can carry aux fuel bag—gives 2 additional hours)
Ordnance:	2.75 in Rockets, 7.62 Miniguns, .50-cal MG
Lift Capability:	**7 Troops/6 Litters Cargo—2,000 lbs**
Employment Considerations:	Best used for special tasks such as recon insert and extract; or command and control.

CH-46E

Primary Mission:	Troop Transport
Alternate Mission:	Cargo Transport, MEDEVAC, TRAP, Recon Inserts
Crew Configuration:	2 Pilots, 1 Crew Chief, 1 Gunner
Max Speed (combat configured):	130 knots
Max Endurance (combat configured):	1 hour 45 minutes
Combat Radius:	100 nmi
Air Refuelable:	No (can carry internal fuel tank)
Ordnance:	.50-cal MG
Lift Capability:	**15 Troops Combat Loaded Cargo—5,000 lbs**
Employment Considerations:	Requires escort & FARP. Limited in high or hot environments.

CH-53A/D

Primary Mission:	Cargo Transport
Alternate Mission:	Troop Transport
Crew Configuration:	2 Pilots, 1 Crew Chief, 1st Mech, AO, Gunner
Max Speed (combat configured):	130 knots (external cargo lowers speed)
Max Endurance (combat configured):	2 hour(A), 6 hour(D)
Combat Radius:	200 nmi
Air Refuelable:	No (can offload fuel from MK-105)
Ordnance:	,50-cal MG
Lift Capability:	**37 Troops Combat Loaded** **Cargo—13,000 lbs**
Employment Considerations:	Internal lift helps speed but slows dropoff. External lift slows speed but helps dropoff.

CH-53E

Primary Mission:	Cargo Transport
Alternate Mission:	Troop Transport
Crew Configuration:	2 Pilots, 1 Crew Chief, 1st Mech, AO, Gunner
Max Speed:	150 knots (external cargo lowers speed)
Max Endurance (combat configured):	4 hours 30 minutes
Combat Radius:	200 nmi
Air Refuelable:	Yes (can offload fuel from internal fuel tanks or bladder)
Ordnance:	.50-cal MG
Lift Capability:	**55 Troops** **Cargo—32,000 lbs**
Employment Considerations:	Same as Ch-53AD. Can provide forward refueling of the assault force. Can lift 155mm howitzer. Can provide AC recovery.

Appendix I

Helicopter Control

1. General

A major concern in helicopterborne operations involves procedures in coordinating and controlling flights of assault helicopters, particularly during conditions of reduced visibility. Helicopter crews may require assistance in approaching, landing, and taking off from PZs and LZs. Terminal guidance is the primary means used to coordinate helicopter movement in and out of PZs and LZs. Terminal guidance is electronic, mechanical, visual, or other assistance given an aircraft pilot to facilitate arrival at, operation within or over, landing upon, or departure from an air landing or airdrop facility.

a. Initial Terminal Guidance (ITG). ITG is that terminal guidance provided for the initial helicopter waves in the LZ. ITG teams of force reconnaissance company or reconnaissance battalion, Marine division, have the inherent capability to provide terminal guidance for initial helicopter waves in the LZ. ITG teams are composed of personnel who are inserted into the LZ in advance of the LZCT. They execute prelanding reconnaissance tasks and establish and operate signal devices for guiding the initial helicopter waves from the IP to the LZ. The ITG teams may be the first elements to make contact with the enemy. It is of the utmost importance that they report promptly any enemy activity which may effect the landing. The use of ITG teams may increase the difficulty or even prevent the use of LZ preparation fires due to the presence of friendly troops in or around the LZ. All ground units must be trained, equipped, and capable of performing ITG for small helicopter landings. A rifle squad, for example, may be required to perform an ITG mission in order to conduct a medical evacuation consisting of one helicopter landing at one point. ITG tasks may include—

- Locating or verifying LZs, sites, or points.
- Marking of LZs, sites, or points.
- Determining and marking obstructions in zones and sites.
- Giving advance notice of enemy activities.
- Establishing homing and guidance devices.
- Directing initial waves from the IP into the zone.
- Recommending actions to be taken by following waves.
- Preparing for the arrival of subsequent terminal guidance personnel and equipment.

If landing zone preparation fires precludes use of ITG teams, a homing/signaling device may be placed in the zone by an aerial drop immediately after preparation fires are concluded.

b. Terminal Guidance. The HST has the capability to provide terminal guidance for subsequent helicopter waves in the LZ. The HST is a task organization whose composition is formed and equipped for employment in an LZ. It facilitates landing and movement of helicopterborne troops, equipment, and supplies, and the evacuation of selected casualties and POWs. The team usually includes a headquarters element, a helicopter control element, and an LZ platoon. The LZ platoon includes personnel to provide supply and engineer support functions. The helicopter control element consists of an LZCT provided by the ACE commander and may include personnel to provide

helicopter refueling and emergency maintenance. The LZCT may be task-organized from the MATCS when the size or scope of the operation so warrants and the MAGTF commander determines it necessary. *The mission of the MATCS is to provide air traffic control service at expeditionary airfields and remote landing sites under all-weather conditions in support of the FMF.* MATCS tasks include—

- Installing and operating air traffic control and navigational systems required for the control of aircraft at expeditionary airfields and remote landing sites.
- Providing air traffic control services that facilitate the safe, orderly, expeditious flow of aircraft within designated terminal/landing areas.
- Maintaining the capability to deploy independent air traffic control teams/units.

The MATCS is part of the MACG providing Marine air traffic control detachments. The MATCS detachment provides air traffic control services for the safe, orderly, and expeditious flow of aircraft within designated terminal/landing areas. The medium/low threat environment requires MACCS agencies to have tactical systems *having quick set-up and tear-down capabilities.* In addition, the logistical footprint must be kept to a minimum. Task organization as directed by the MAGTF commander is the concept for the remote landing site. The recommended configuration is—

- The MRAALS, AN/TPN-30 which is designed as a terminal navigation system to fulfill a requirement whereby a suitably equipped aircraft can execute an instrument approach to a remote landing site.
- To provide air traffic controller services, if required, by tasking based on the projected volume, density, and duration of aircraft operations via one of the following:
  - AN/PRC-113 UHF/VHF man portable radio with secure voice capability.
  - A remote landing site shelter.
  - A remote landing site vehicle.
  - EMCON control procedures that can be accomplished by the use of a portable signal light gun.

NOTE: The above listed assets may not be organic to a MATCS and would be provided as directed by the MAGTF commander.

The MATCS detachment will support the Marine aircraft control requirements of the MAGTF. Up to four instrument flight rules (IFR), capable airfields, and limited support at remote landing sites can be provided. Surveillance radar assets of the MATCS will also be integrated into the air defense system as appropriate. Further, the use of existing host nation assets must be considered.

2. Execution of ITG

All ground units must be trained, equipped, and capable of performing ITG for small helicopter landings. ITG execution involves—

- Identifying and marking the PZ or LZ.
- Staging ground elements for pickup or guiding ground elements from the aircraft to a designated area near the LZ.
- Communicating information to ground units entering or departing the zone.
- Communicating information to approaching/departing aircraft.
- Guiding and directing approaching/departing aircraft.

3. Basic Plans of ITG

Successful ITG execution is based on precise reverse planning and sound understanding of the five basic plans that comprise the reverse planning sequence. They are the—

- Ground tactical plan.
- Landing plan.
- Air movement plan.
- Loading plan.
- Staging plan.

4. Terminal Guidance

All terminal guidance (including ITG) is a matter of orderly movement and control of air elements into and out of zones, sites, and points. Control considerations include—

- Ground movement into the assembly area. (Ground)
- Organization of the assembly area. (Ground)
- Ground movement from the assembly area to the holding area. (Ground)
- Ground movement from the holding area to the PZ. (Ground)
- Air movement from the helicopter staging area to the PZ. (Air)
- Air movement from the PZ to the IP. (Air)
- Air movement from the IP to the LZ. (Air)
- Air movement out of the LZ. (Air)
- Ground movement from the LZ to the objective or staging area. (Ground)
- Actions at the objective. (Ground)
- Actions upon completion of the mission. (Ground/Air) (See planning diagram in figure I-1)
- Providing security for PZ or LZ operations.

5. Equipment List

A standard HST kit is essential to terminal guidance, ITG, and subsequent HST operations. A kit would consist of general purpose-type hand tools and equipment used by HST personnel to perform single and dual point hookups during HST operations. Also included are materials to complete rigging procedures and to prepare equipment for external lift as prescribed in _____ Multiservice Helicopter External Air Transport: Basic Operations and Equipment.

LIST OF COMPONENTS

Item #	Stock #	Nomenclature	U/I	Qty
1	8115-00-999-3041	HST Box	Ea	1
2	8415-01-247-6606	Gloves, Electric	Pr	2
3	8415-00-268-7868	Gloves, Leather	Pr	8
4	6230-00-926-4331	Flashlight, Conesh	Ea	12
5	6135-00-930-0030	Battery, Nonrechargeable	Pg	1
6	8415-00-177-4974	Vest, Flourescent orange	Ea	4
7	8345-00-174-6865	Panel marker	Ea	4
8	5120-00-240-5328	Wrench, 12-inch crescent	Ea	1
9	5120-00-900-6130	Sledge, 3 lbs	Ea	1
10	5120-00-293-3159	Screwdriver, Flat	Ea	1
11	5120-00-234-8913	Screwdriver, Crosstip	Ea	1
12	5120-00-277-4244	Vice grips	Ea	1
13	8340-00-261-9749	Stake, Metal	Ea	24
14	5315-00-161-8831	Nails, 8HD	Lb	2
15	7510-00-074-5124	Tape, Green, 2-inch	Roll	2
16	1680-00-175-9149	Strap, Cargo tie down	Ea	1
17	4020-00-240-5943	Cord, Nylon, 550 feet	Sp	1

(Refer to equipment display in figure I-2.)

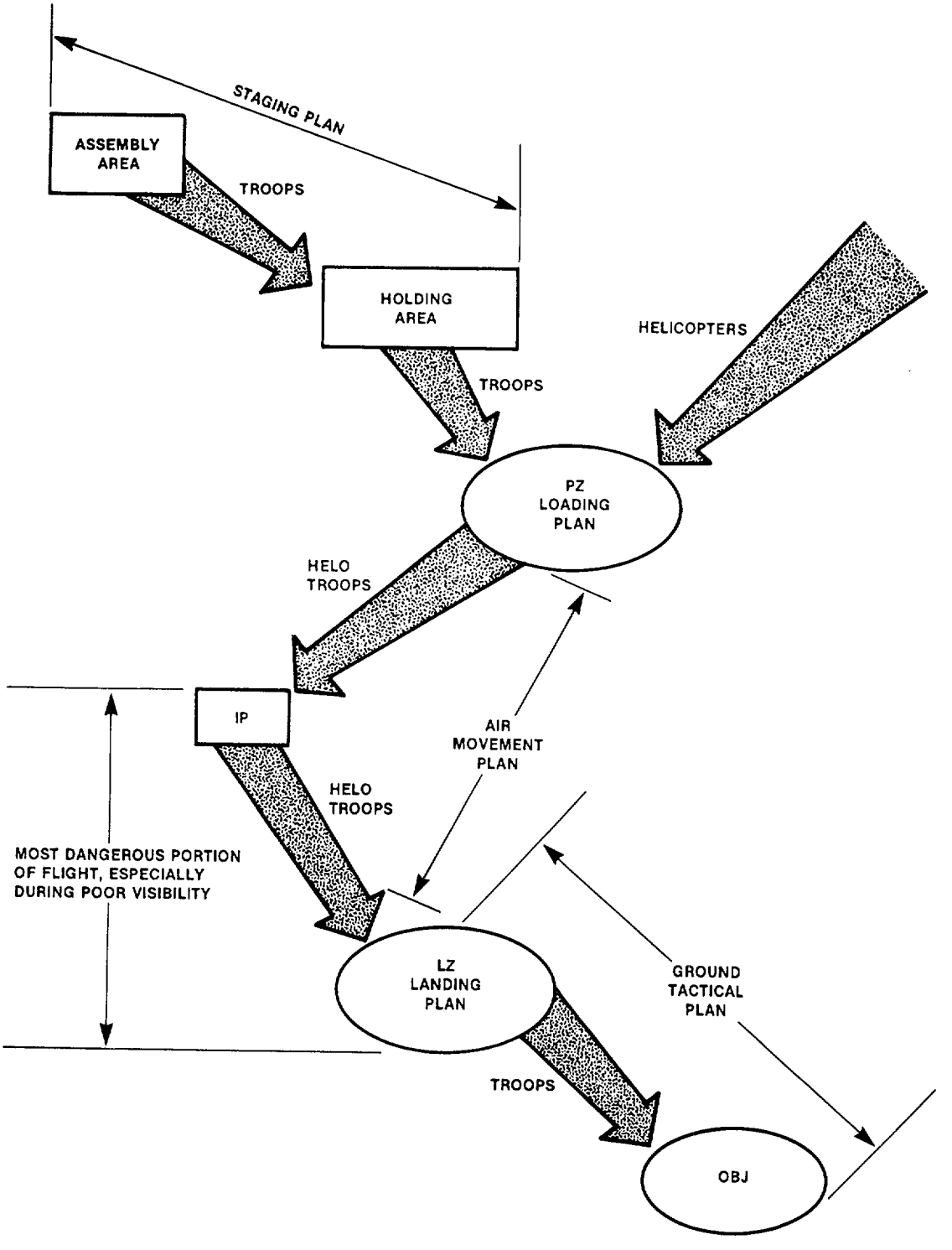


Figure I-1. Planning Diagram.

PURPOSE OF HST KIT ITEMS

Item #	Nomenclature	Purpose
1	HST Box	Keep all components together
2	Gloves, Electrical	Protection from static electricity
3	Gloves, Leather	Protect rubber gloves
4	Flashlight	Night arm-and-hand signals
5	Battery, Nonrechargeable	For HST flashlights
6	Vest, Flourescent orange	Identify AC directors
7	Panel marker	Ground marker to form letter T
8	Wrench, 2-inch crescent	Work slings and load prep
9	Sledge, 3 lbs	Hammer stakes, ties panels down
10	Vice Grips	Work slings, prep equipment
11	Screwdriver, Flat	Work slings, prep equipment
12	Screwdriver, Cross tip	Work slings, prep equipment
13	Stakes, Metal	Hold down panels
14	Nails, 8HD	Hold panel markers normal contds
15	Tape, Green, 2-inch	Hold slings/nets prevent tangle
16	Strap, Cargo, 5,000 lbs	Hold parts intact during flight
17	Cord, Nylon, 550 feet	Tie down loose parts/equipment

(Refer to equipment display in figure I-2.)

6. Conduct of Night Operations

a. It is anticipated that in a high threat environment there will be a greater requirement to conduct night operations to increase survivability. Under optimum conditions of natural illumination, terrain configuration, and visibility, low level flight is feasible; however, LZ identification and approaches require the use of LZ lighting or flares.

b. The use of night vision goggles provides the aircrew with the capability to conduct night terrain flight and allows them to find an LZ and land without illumination. However, use of the night vision goggles by themselves is not always the answer. The capabilities and limitations of the goggles must be fully understood if they are to be an asset rather than a liability.

c. Whether using the unaided eye or night vision goggles, a slower tempo of activity must be accepted in night operations. Smaller helicopter waves, preferably of two aircraft, should be used. The interval between the waves should be increased for adequate separation between flights and to minimize congestion in the LZ. Flight delays encountered will be due to the use of procedural air traffic control techniques and to the problems inherent in conducting rendezvous, approaches, and landings at night. Troop and cargo loading and unloading operations tend to be slower and more complicated. Such delays are to be anticipated, and time factors should be increased accordingly in plans and assault schedules. The end result is a slower buildup of combat power in the LZ.

d. Landing Zone Lighting. Some type of LZ lighting aid should be used to assist the pilot in locating and identifying the landing zone and making a landing at night. Lighting aids (e.g., sophisticated terminal guidance systems, expeditionary lights, flare illumination, field expeditionary lights), and field expedients (e.g., vehicle lights, flashlights, strobe lights, bonfires, and smudge pots) have been used successfully. Personnel on the ground will need to know whether the pilots will be using unaided vision or night vision goggles. Bright lights around a landing zone could cause problems for pilots using the goggles.

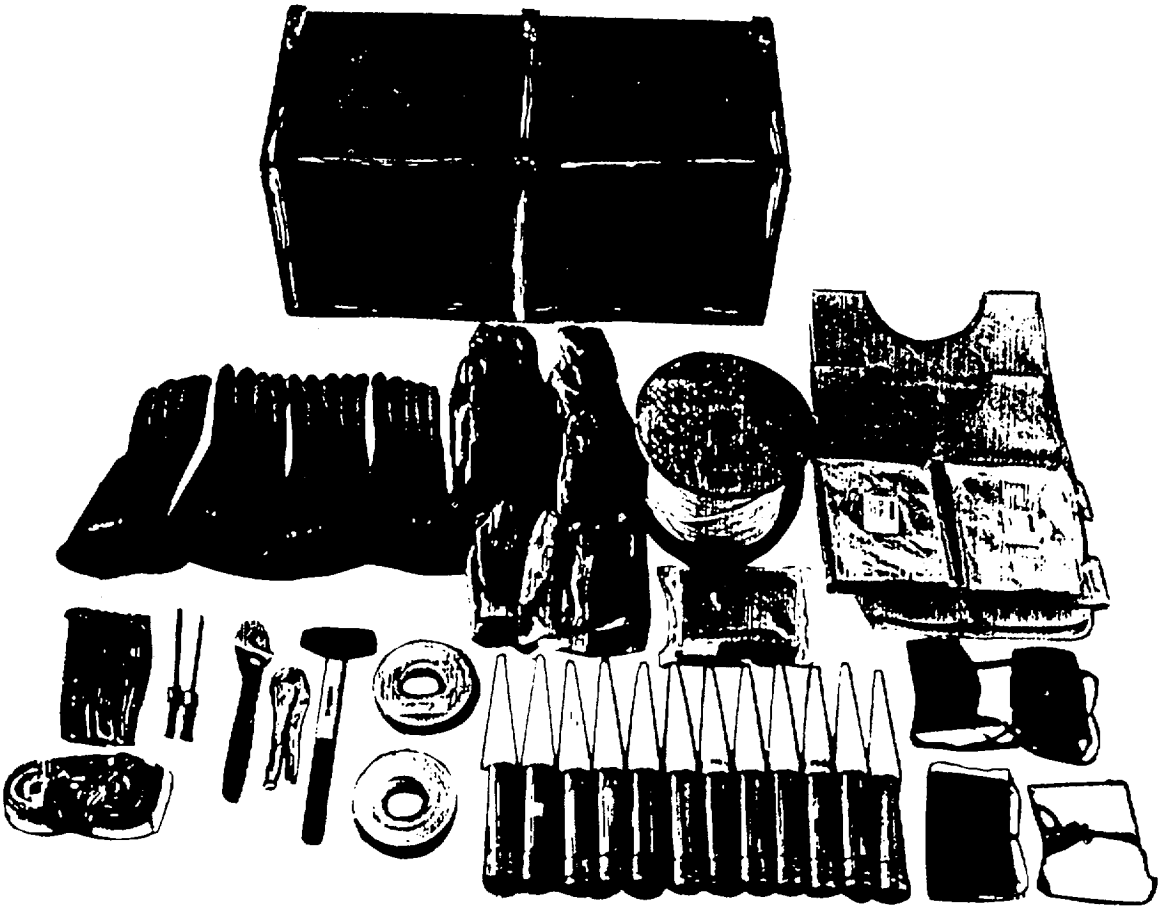


Figure I-2. HST Equipment Layout.

Likewise, if the landing lights are on an extremely dim setting, pilots using unaided vision would not be able to locate the landing zone. Regardless of the means employed, landing zone lighting should—

- Be visible to the pilot
- Identify an area free of obstacles which is safe for hovering and landing
- Employ three or more lights at least 15 feet apart to prevent autokinetic illusions
- Provide orientation along an obstacle free corridor for landings and takeoffs.

e. Glide Angle Indicator Light (GAIL). The helicopter portable lighting set (NAEC 515420-1) is composed of one GAIL and eight airfield emergency portable marker lights. The set is used to assist helicopters in conducting safe landings over hazardous obstacles at night in forward combat areas. GAIL is a battery-powered device which projects a tricolored beam to provide the helicopter with a glidepath. It is intended to be used in conjunction with the eight battery-powered marker lights which mark the landing zone. GAIL weighs 30.5 pounds with battery and the entire set with carrying case weighs 167.5 pounds.

Operating, service, and repair instructions for the set are contained in NAVAIR 51-40ACB-2. Pilots wearing night vision goggles are not able to properly use the GAIL system.

(1) The range of the tricolored beam is 3 miles or greater at 20 percent atmospheric illumination. The intensity of the beam can be adjusted by a variable rheostat to improve beam acquisition and colored contrast. GAIL incorporates a feature which permits ground-to-air coded signaling with the tricolored beam for identification and authentication purposes. The beam is illustrated and characteristics are provided in figure I-3.

(2) The green beam delineates the desired angle of descent and assures the pilot that he is clear of obstacles if he stays in the green sector. Clearance of obstacles is also assured if he flies in the amber sector, but his approach will be steeper and will require a greater rate of descent. Flying within the red sector indicates to the pilot that he is too low and may be in danger from obstacles on the approach path. When rigged and sighted properly, the bottom of the red beam will clear all obstacles and provide a red sector of at least 4 degrees vertically above the highest obstruction along the approach corridor. The color mixture between the green and red sectors can result in a band of white of less than 4 minutes. Do not interpret this white band as amber.

(3) The glide angle can be adjusted from 25 degrees above the horizontal to 10 degrees below it. The reference point for measuring glide angle is the bottom of the green beam. If glide angle is set at 4 degrees, the pilot will see the green beam from 4 degrees to 6.5 degrees above the horizontal and within a vertical span of 270 feet at a range of 1 nmi. A helicopter at a range of 3 mm, below 1,300 feet above ground level, and flying an approach to a 4 degree glide angle will see a red beam first and then fly into the green beam as range closes. GAIL's relatively narrow beam makes its unaided acquisition difficult, so additional lights should be used to assist the pilot in finding GAIL.

(4) Angles of glide slope from 4 degrees to 10 degrees are common and acceptable, but angles greater than 10 degrees cause increased difficulty in maintaining the aircraft on the glide path. A landing zone should not be used unless there is no option when the zone is so small that, in order to clear obstacles, glide slope angle must exceed 10 degrees.

(5) GAIL should be employed whenever the situation permits. The ITG team provided by a reconnaissance unit should install and operate GAIL in support of night helicopterborne assaults. GAIL should be placed so that it projects the beams along the avenue of approach and the glide slope angle provides a safe margin of clearance over the highest obstacle. An approach should be into the wind, but if obstacles or the tactical situation make such an approach inadvisable, the approach should be along the axis closest to the windline that also permits a glide slope angle of 10 degrees or less. Landing zone lighting, approach heading, and glide angle shall be included in the preflight briefing.

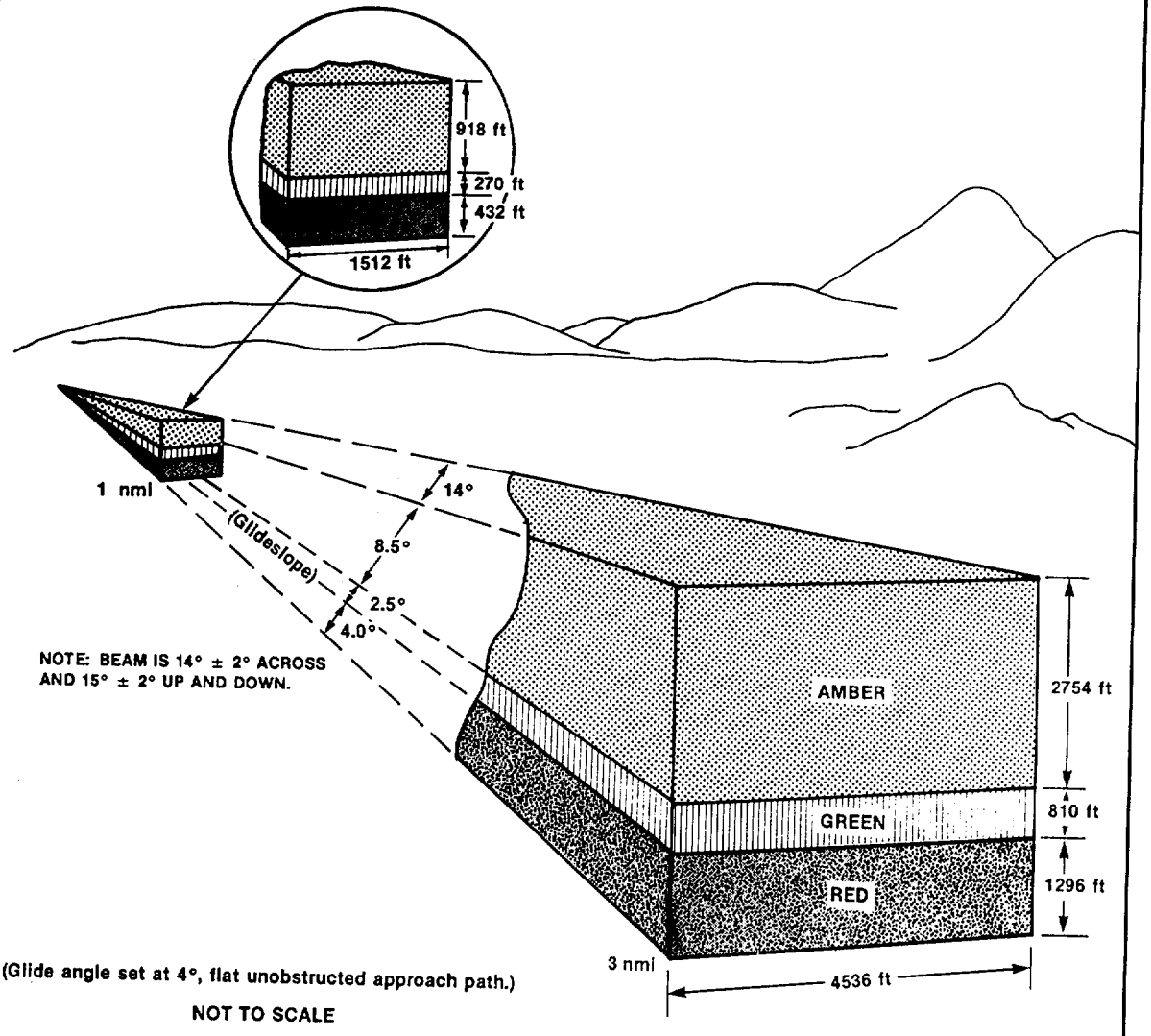
f. Landing Zone Lighting Patterns. Since a variety of LZ lighting patterns are in use, the assault support helicopter pilot should anticipate diversity in lighting patterns when participating in joint and/or combined operations. The preferred method is the lighted T pattern. An alternate method which is in accordance with NATO STANAGs is the inverted Y pattern. (See fig. I-4.)

The lighted T pattern is standard for the light provided in the GAIL set. It can be effectively used for all aircraft. NATOPS flight manuals show other lighting configurations for use when additional marker lights are available. The lighted T can be used without the GAIL system for confined and unprepared lighting and night operations. Its advantages are as follows:

(1) Provides excellent acquisition of the LZ from a distance.

(2) Spacing of lights at the head of the T simplifies identification of approach direction.

COLOR	MEANING	VERTICAL ANGLE (degrees)	BEAM HEIGHT (ft) (at ⅓ nmi range)
AMBER	High approach	8.5 ± 1	918/2754
GREEN	On glide path	2.5 ± .5	270/810
RED	Low approach	4.0 ± .5	432/1296



(Glide angle set at 4°, flat unobstructed approach path.)

NOT TO SCALE

Figure I-3. GAIL Bean Pattern.

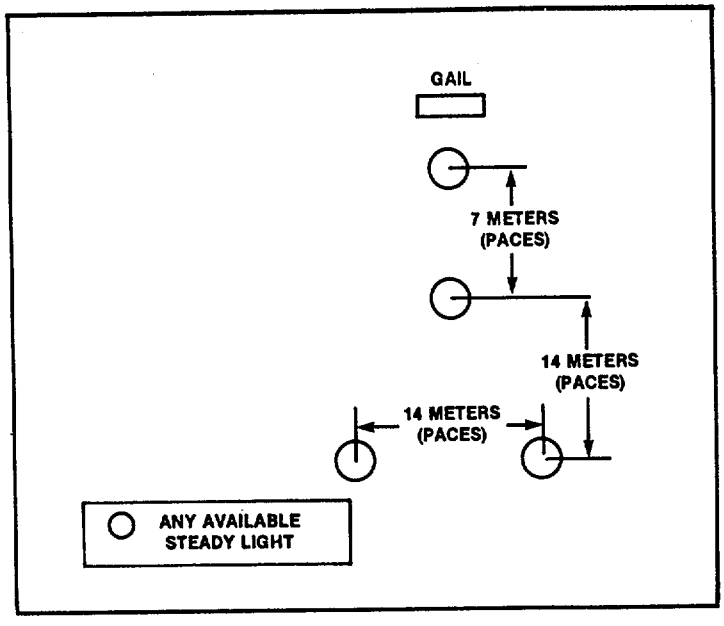


Figure I-4. Inverted "Y" GAIL Pattern.

(3) Provides glide slope, course alignment, and wind drift information.

(4) Can be set up with only one GAIL lighting set.

(5) Provides at least two reference lights at all times to decrease the chance of spatial disorientation on approach and final landing.

f. Lights at the head of the T must be at least 5 paces apart and the lights in the stem must be at least 8 paces apart. To indicate the windline, the head of the T should be positioned to the windward side and perpendicular to the stem. If the GAIL system is used, it is set up 15 paces out from the head of the T, centered, and aligned with the stem of the T. Set up in this fashion, the lighted T provides visual cues to determine the correctness of the glide angle by observing the apparent distance between the lights in the stem of the T. (See fig. I-4.) If the lights in the stem appear merged into a single light, a shallow glide angle is indicated. If the lights in the stem appear to increase in distance apart, the approach is becoming steeper. Approach path lineup corrections can be made using the stem to the T. If the stem points to the left, the helicopter is right of course and should correct to the left; if it is to the right, the helicopter is left of course and should correct to the right.

g. Additional LZ lighting patterns which may be used for assault support helicopter night landings are as follows:

(1) Figure I-5 portrays an LZ lighting pattern incorporating a GAIL system. As should be the case in daylight operations, the zone is divided into distinct landing points providing for safe separation between aircraft and precluding disorientation during approaches and landings.

(2) Figure I-6 is the external cargo lighting pattern in the CH-53 NATOPS flight manual. This pattern provides forward and laterally offset reference lights visible to the pilot to assist in hovering flight. It can be used by the CH-53, CH-46, and UH-1 for night operations.

(3) Figure I-7 shows various lighting configurations that can be used with any available lights.

h. To decrease the possibility of pilot disorientation, a minimum of two lights shall be observed by the pilot at the controls throughout the landing phase.

7. Basic Initial Terminal Guidance Procedure

As previously stated, all ground units must be trained, equipped, and capable of performing an ITG for small helicopter landings. The following steps apply in performing ITG for small helicopter landings:

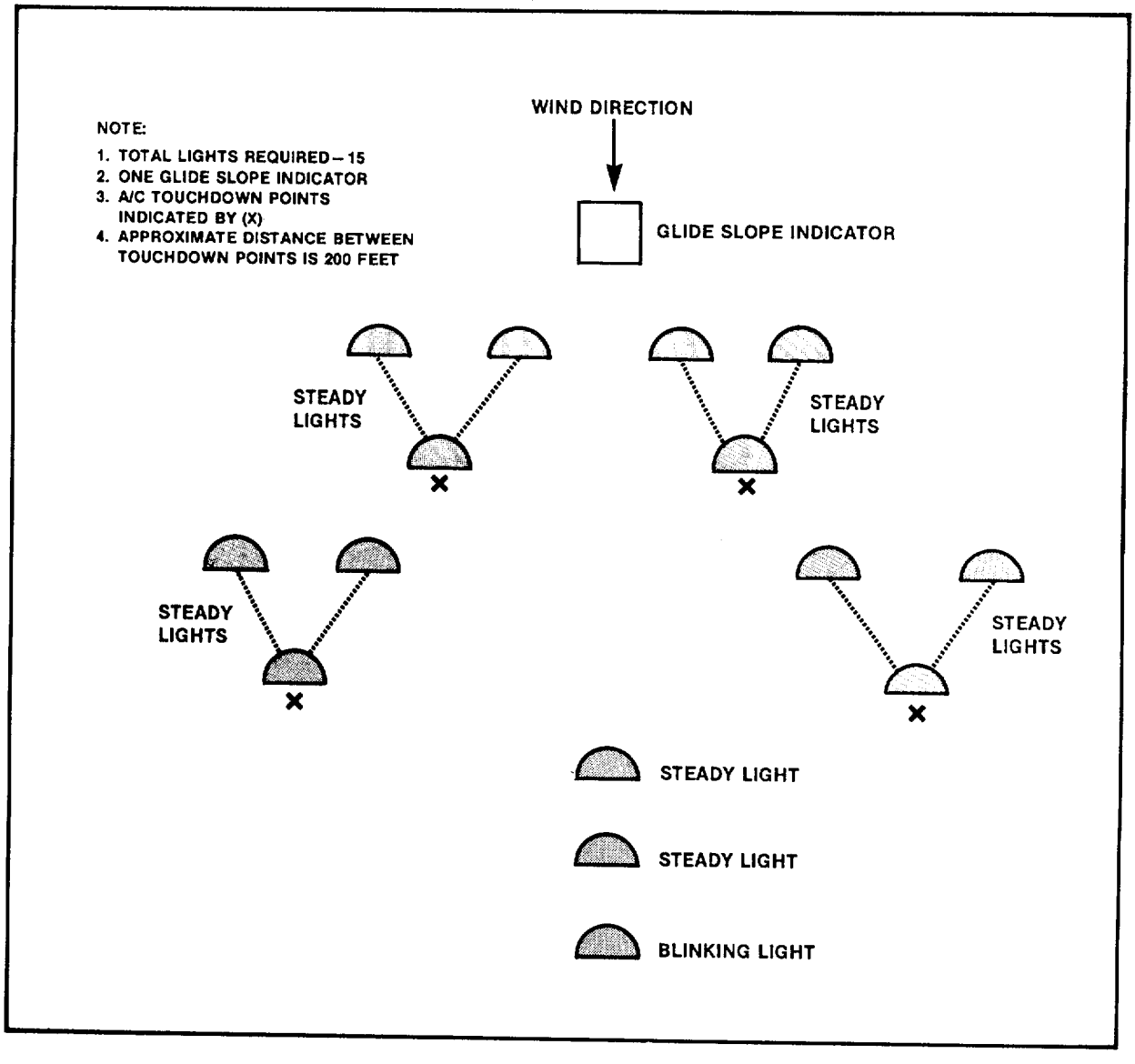


Figure I-5. Confined and Unprepared Area Lighting Pattern.

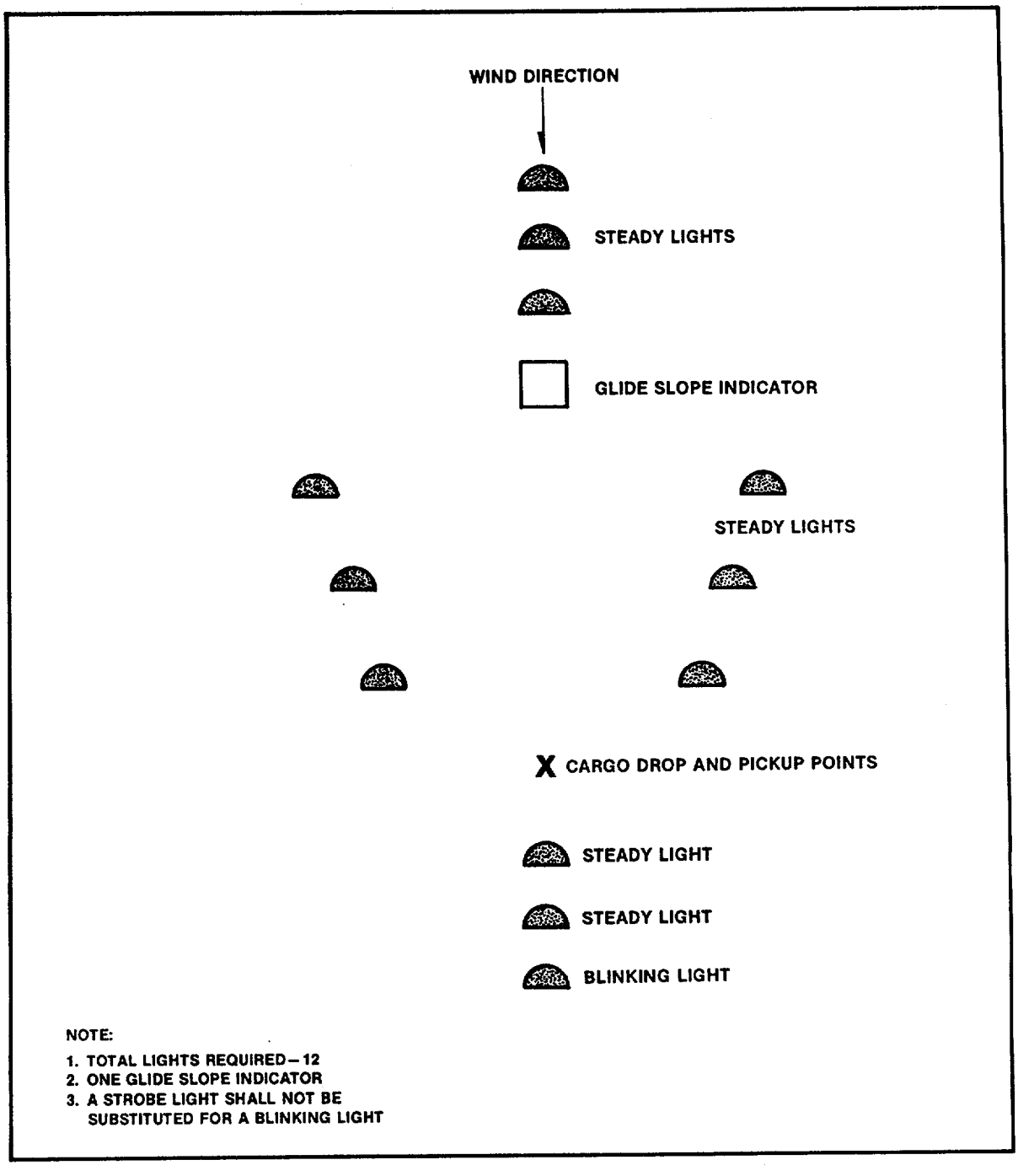


Figure I-6. External Cargo Lighting Pattern.

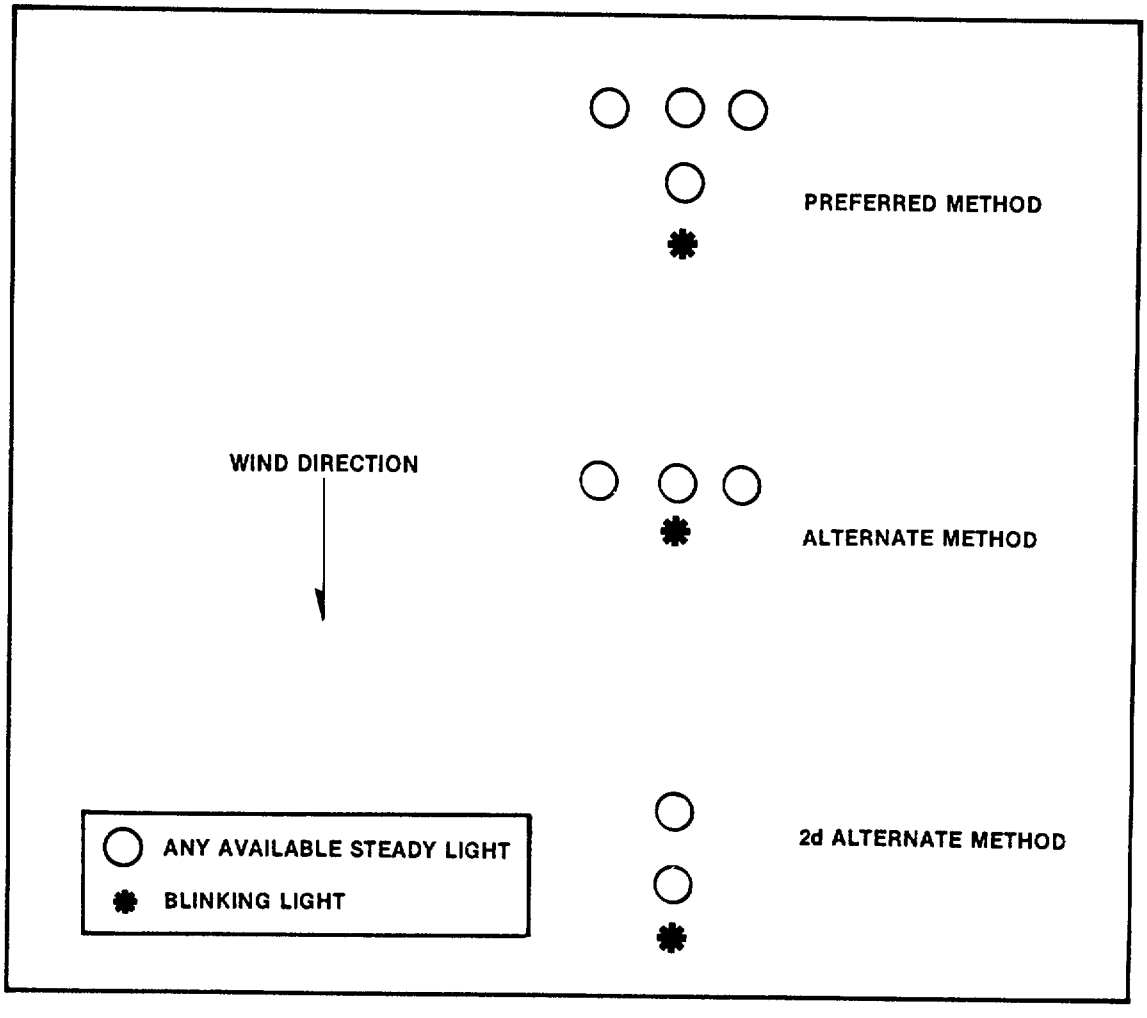


Figure I-7. Night LZ Marking With Available Lights.

a. Select a PZ/LZ.

b. Mark the zone for day or night.

c. Organize an area around the zone to stage troops, equipment, or supplies to be picked up or moved upon landing.

d. Select an IP near the LZ. The IP is an air control point in the vicinity of the zone from which individual flights are directed to their prescribed landing sites.

e. Establish communications with the approaching flight.

f. Give an LZ brief to the flight leader. The information in figure I-8 should form the basis of the brief prior to the transport helicopter landing in the LZ. LZ brief radio transmissions will be

addressed by line number. Unknown or not applicable line numbers will be referred to as negative. For example:

Line One—negative
Line two—98632
Line three—C3e
Line four—negative
Etc.

LANDING ZONE BRIEF

1. MISSION NO. _____
2. LOCATION COOR/RAD/DME _____
3. UNIT CALL SIGN _____
4. FREQUENCY PRI UHF_____FM_____
   SEC UHF_____FM_____
5. LZ MARKING _____
6. WIND DIRECTION/VELOCITY _____ / _____
7. ELEVATION/SIZE _____ / _____
8. OBSTACLES _____
9. FRIENDLY POSITIONS: DIRECTION/DISTANCE _____ / _____
10. LAST FIRE RECEIVED: TIME/TYPE _____ / _____
11. DIRECTION OF FIRE/DISTANCE _____ / _____
12. CLEARANCE TO FIRE: DIRECTION/DISTANCE _____ / _____
13. APPROACH/RETIREMENT (RECOMMENDED) _____ / _____
14. PERSONNEL/EQUIPMENT _____ / _____
15. OTHER _____

Figure I-8. Landing Zone Brief.

Appendix J

Formats for the Five Basic Plans

Successful use of helicopters requires a careful analysis of METT-T and detailed, precise reverse planning. The formats provided in this appendix provide a guide for the development of the five basic plans that comprise a helicopterborne operation. These plans are the ground tactical plan, the landing plan, the air movement plan, the loading plan, and the staging plan.

Ground Tactical Plan

All planning evolves around this plan. The plan specifies actions in the objective area which ultimately accomplish the mission. The information listed below provides a guide which can be used to establish the plan.

1. MAGTF Commander's Mission and Intent

2. GCE Commander's Mission and Intent

3. Helicopterborne Unit Commander's (HUC) Mission and Intent

4. Forced Time Schedule

   a. Time that assault elements land (L-hour).

   b. Reverse planning sequence.

TIME	EVENT
_____	H-hour
_____	L-hour
_____	1st assault wave(s) arrive in PZ
_____	Assault elements arrive in assembly area
_____	Assault elements arrive in holding area
_____	Assault elements arrive in PZ
_____	Issue warning order
_____	Intell (S-2) brief
_____	Commander's guidance
_____	Staff briefs
_____	Operations order
_____	Mission brief

5. Actions Required in the Objective Area

Secure LZ _____ _____ _____
(name/coord) (name/coord) (name/coord)

Establish LZ control at above LZ(s).

Secure objective(s) _____ _____ _____
(name/coord) (name/coord) (name/coord)

Perform the following actions upon securing objective(s):

_____

_____

_____

6. Missions Assigned to Subordinate Units

Co _____
Co _____
Co _____
Co _____

Attachments with assault elements:

Follow on attachments:

7. Coordinating Instructions:

Landing Plan

The landing plan must support the ground tactical plan. The plan sequences elements into the area of operations so that units arrive at locations and times prepared to execute the ground tactical plan. The information listed below provides a guide which can be used to establish the plan.

1. Size and Location of Primary and Alternate LZ(s)

PRIMARY		ALTERNATE	
size _____	location _____	size _____	location _____
size _____	location _____	size _____	location _____
size _____	location _____	size _____	location _____
size _____	location _____	size _____	location _____

2. Known and Suspected Enemy Locations in and Around the LZ

size _____ location _____
size _____ location _____
size _____ location _____
size _____ location _____

3. Unit Tactical Integrity and Spread Loading

15-man loads (sticks)
One load per CH-46
Two loads per CH-53
Squads in one aircraft
Platoons in one wave
Key leaders NOT loaded on the same aircraft
Crew-served weapons and crews sufficiently spread loaded

4. All Members Briefed and Oriented to the Landing

Briefed on actions at the LZ
Briefed on actions to secure the LZ

5. Task Organization

For landing
Subsequent to landing

6. Determine Who Will Make the Decision to Switch to an Alternate LZ

   HUC
   S-3
   Air Mission Commander
   Transport Commander
   HC(A)

7. Factors in Deciding to Switch to Alternate LZ(s)

   LZ too hot
   Downed aircraft in LZ
   Escort warning of ambush
   Other:

8. Plan for Supporting Fires

   Planned fires for air movement
   Planned fires for landing
      Preparation fires in LZ
      Preparation fires near LZ
      Distant preparation fires
      Preplanned fires in and around LZ
      On call fires
   Planned fires subsequent to landing

9. Plans for Medical Evacuation

   Air
   Ground

10. Plans for Resupply

   Air
   Ground

Air Movement Plan

The air movement plan is based on the ground tactical and landing plans. The plan specifies the air movement schedule and provides instructions for the air movement of troops, equipment, and supplies from PZs to LZs. The information listed below provides a guide which can be used to establish the plan.

1. Tentative flight routes are selected by the HTC. The HUC's S-2 studies the routes and makes recommendations. The HUC's S-3 closely notes checkpoints and control features.

2. The air movement schedule is developed to accomplish the landing plan. The air movement schedule is provided by the HTC. The HUC studies the schedule and makes recommendations.

3. Air speeds, flight altitudes, and aircraft formations are determined by the HTC.

4. Escort of transport helicopters and air fire support during air movement is determined by the air commander.

5. Aircraft availability information is provided to the HUC.

   CH-46 _____
   CH-53D _____
   CH-53E _____
   UH-1N _____
   AH-1W _____

   Fixed wing available:

6. The wave allocation of transport helicopters is determined by the HUC.

	1WV	2WV	3WV	4WV
CH-46	_____	_____	_____	_____
CH-53D	_____	_____	_____	_____
CH-53E	_____	_____	_____	_____
UH-1N	_____	_____	_____	_____

7. Wave allocation of escort aircraft is determined by the air commander.

	1WV	2WV	3WV	4WV
AH-1W	_____	_____	_____	_____

8. Air departure points from a start point in the sky to the LZ are determined by the air commander.

9. Loading times are determined by the air commander.

WAVE	PZ LOAD TIME
1	_____
2	_____
3	_____
4	_____

10. Lift off times are determined by the air commander.

WAVE	LIFT OFF TIME
1	_____
2	_____
3	_____
4	_____

Loading Plan

The loading plan is based on the air movement plan. It ensures that Marines, equipment, and supplies are loaded on the correct aircraft. Helicopter loads are also placed in priority to establish a bump plan. The information listed below provides a guide which can be used to establish the plan.

1. Refer to paragraphs 5 and 6 of the guide for the air movement plan.

   a. Review the total number (by type) of transport aircraft available.

   b. Review the number of aircraft by type allocated to each wave.

2. Determine which personnel, weapons, and equipment will be loaded on each aircraft.

   a. Maintain unit integrity.

   b. Spread load key personnel, weapons, and equipment.

3. Determine if the preparation of a written document is necessary.

   a. An informal document which lists the personnel, key weapons, and equipment by aircraft.

   b. A formal document which include a HWSAT.

4. Establish a bump plan so that essential personnel and equipment are **NOT** unnecessarily delayed in case of aircraft complications.

   a. The plan defines who (by name) gets off each aircraft first, second, third, etc., in the event the aircraft cannot carry a full load.

INDIVIDUAL BUMP PLAN (EXAMPLE)

AIRCRAFT	UNLOAD	SEQUENCE
101-1	Off 1st	Johnson
	2	Jones
	3	Smith
	4	Howard
	5	Stevens
	6	Britt
	7	Randall
	8	Bump entire load

   b. The bump plan also defines when each aircraft load will subsequently be loaded in the event an aircraft cannot fly.

LOAD BUMP PLAN (EXAMPLE)

AIRCRAFT	RELOAD PLAN IF BUMPED
101-1	Next available CH-46
101-2	Next available CH-46 after 101-1
101-3	Next available CH-46 after 101-2
101-4	1st available CH-46 in 2d wave
101-5	1st available CH-53D or E

5. The ground commander designates unit loading sites.

6. The ground commander establishes the plan and procedure for controlling the arrival, loading, and departure of all aircraft.

7. The ground commander designates a PZCO.

Staging Plan

The staging plan establishes the specific sequence, loads, ground routes, guides, and times from the assembly area to the holding area and from the holding area to the PZ. The example listed below provides a guide which can be used to establish the plan.

Sequence	Load	Route	Guide	Depart Hold AR	ARVPZ
1	101-1	A	Lt Jones	0500	0515
2	101-2	B	SSgt Brown	0500	0515
3	101-3	C	Sgt Smith	0500	0515
4	102-1	A	Lt Wells	0515	0530

Appendix K

Glossary

Section I. Acronyms and Abbreviations

AAW ..... antiair warfare
ACA ..... airspace coordination area
ACE ..... aviation combat element
ADA ..... air defense artillery
ADP ..... automatic data processing
AM ..... amplitude modulation
AMC ..... airspace management and control
AO ..... air officer
ASRT ..... air support radar team

BA ..... basic allowance
BCP ..... battery command post
BSA ..... beach support area
BSSG ..... brigade service support group

C^2 ..... command and control
CAP ..... combat air patrol
CAS ..... close air support
CE ..... command element
CEOI ..... communications-electronics operations instructions
CFU ..... contingency fire unit
CIFS ..... close-in fire support
CO ..... commanding officer
COC ..... combat operations center
CP ..... command post
CS ..... combat support
CSS ..... combat service support
CSSD ..... combat service support detachment
CSSE ..... combat service support element

DASC ..... direct air support center
DCT ..... digital communications terminal
DOA ..... day(s) of ammunition
DOS ..... day(s) of supply
DS ..... direct support
DZ ..... drop zone

E&E ..... escape and evasion
ECM ..... electronic countermeasures
EEI ..... essential elements of information
ELINT ..... electronics intelligence
EMP ..... electromagnetic pulse
EW ..... electronic warfare

FAC ..... forward air controller
FAC(A) ..... forward air controller (airborne)
FARP ..... forward arming and refueling point
FASCAM ..... family of scatterable mines
FDU ..... fire direction unit
FEBA ..... forward edge of the battle area
FLOT ..... forward line of own troops
FM ..... frequency modulation
FMF ..... Fleet Marine Force
FRAGO ..... fragmentary order
FSC ..... fire support coordinator
FSCC ..... fire support coordination center
FSSG ..... force service support group

GAIL ..... glide angle indicator light
GCE ..... ground combat element
GS ..... general support

HAC ..... helicopter aircraft commander
HAC/PQM ..... helicopter aircraft commander/ pilot qualified in model
HC ..... helicopter coordinator
HC(A) ..... helicopter coordinator (airborne)

HCE ..... helicopter control element
HDC ..... helicopter direction center
HE ..... high explosive
HEALT ..... helicopter employment and assault landing table
HF ..... high frequency
HMMWV ..... high mobility multipurpose wheeled vehicle
HRST ..... helicopter rope suspension training
HST ..... helicopter support team
HTC ..... helicopter transport commander
HTF ..... helicopterborne task force
HUC ..... helicopterborne unit commander
HWSAT ..... helicopterborne wave and serial assignment table

IADS ..... integrated air defense system
ICM ..... improved conventional munition
IFF ..... identification friend or foe
IFR ..... instrument flight rules
ILLUM ..... illumination
INTSUM ..... intelligence summary
IP ..... initial point
IPB ..... intelligence preparation of the battlefield

JTF ..... joint task force

km ..... kilometer

LAAD ..... low altitude air defense
LAI ..... light armor infantry
LAV ..... light armored vehicle
LEWDD .... lightweight early warning detection device
LF ..... landing force
LFSP ..... landing force support party
LZ ..... landing zone
LZCT ..... landing zone control team
LZSA ..... landing zone support area

MACCS ..... Marine air command and control system
MACG ..... Marine air control group
MAGTF ..... Marine Air-Ground Task Force
MATCS .... Marine air traffic control squadron
MAW ..... Marine aircraft wing
MBA ..... main battle area
MC ..... mission commander
MC&G ..... mapping, charting, and geodetic
MCSSD ..... mobile combat service support detachment
MEDEVAC ..... medical evacuation
MEB ..... Marine Expeditionary Brigade
MEF ..... Marine Expeditionary Force
METT-T ... mission, enemy, terrain and weather, troops and support available, and time available
MEU ..... Marine Expeditionary Unit
MEZ ..... missile engagement zone
MSSG ..... MEU service support group
MHE ..... material handling equipment
MWCS .. Marine wing communications squadron
MWSG ..... Marine wing support group
MWSS(RW) ..... Marine wing support squadron (rotary wing)

NAO ..... naval aviation officer
NATOPS ..... naval air training and operating procedures standardization program
NAVAID ..... navigation aid
NBC ..... nuclear, biological, and chemical
NVG ..... night vision goggles

OAAW ..... offensive antiair warfare
OAS ..... offensive air support
OIC ..... officer in charge
OP ..... observation post
OPCON ..... operational control
OPORD ..... operation order
OPSEC ..... operations security

PLL ..... prescribed load list
POL ..... petroleum, oil, and lubricants
POW ..... prisoner of war
PQM ..... pilot qualified in model
PZ ..... pickup zone
PZCO ..... pickup zone control officer

RFA ..... restrictive fire area
RFL ..... restrictive fire line

SACC ..... supporting arms coordination center
SAM ..... surface-to-air missile
SATCOM ..... satellite communications
SEAD ..... suppression of enemy air defense
SLAR ..... side-looking airborne radar

SOP ..... standing operating procedure
SPF ..... special purpose force
SPIE ..... special patrol insertion and extraction
SRIG ..... surveillance, reconnaissance, and intelligence group
SSB ..... single side band
STANAG ..... standardization agreement

TAC(A) ..... tactical air coordinator (airborne)
TACC .. tactical air control center (USAF/USN); tactical air command center (USMC)
TADC ..... tactical air direction center
TACP ..... tactical air control party
TAOC ..... tactical air operations center
TAOR ..... tactical area of responsibility
TAR ..... tactical air request
TOW ..... tube launched, optically tracked, wire command link, guided missile system
TRAP ..... tactical recovery of aircraft and personnel

UHF ..... ultrahigh frequency

VHF ..... very high frequency

WDU ..... weapon director unit
WP ..... white phosphorus

XO ..... executive officer

Section II. Definitions

A

acquisition—The process of locating a target with a search radar such that a tracking radar can take over and begin tracking the target.

AGL—Above ground level. (e.g., 500-feet altitude AGL). (FMFRP 0-14)

air defense artillery—Weapons and equipment for actively combatting air targets from the ground. (Joint Pub 1-02)

air officer—An officer (NA/NFO) organic to a ground unit who functions as the chief adviser to the ground commander on all air operation matters.

air support radar team—A subordinate operational component of a tactical air control system which provides ground-controlled, precision flight path guidance and weapons release. (Joint Pub 1-02)

airborne radio relay—(NATO) A technique employing aircraft fitted with radio relay stations for the purpose of increasing the range, flexibility or physical security of communications systems. (Joint Pub 1-02)

airspace coordination area—A block of airspace in the target area in which friendly aircraft are reasonably safe from friendly surface fires. (FMFRP 0-14)

armed helicopter escort—A helicopter armed for suppressive fire and flown in support of transport helicopters, utility helicopters, motorized or troop convoys, and other missions to which they may be assigned.

artillery preparation (fire)—(NATO) Artillery fire delivered before an attack to disrupt communications and disorganize the enemy's defense. (Joint Pub 1-02)

assault support—A Marine Corps term indicating those actions required for the airlift of personnel, supplies, and equipment into or within the battle area by helicopters or fixed-wing aircraft. Assault support includes fixed-wing transport, in-flight refueling, and helicopterborne operations; such operations may be tactical, administrative, or logistic in nature. The tasks of assault support are vertical assault airlift, air delivery, in-flight refueling, and air evacuation.

assault support helicopter—A helicopter which moves assault troops, equipment, and cargo into an objective area and which provides helicopter support to the assault forces.

attack heading—1. The interceptor heading during the attack phase that will achieve the desired track-crossing angle. 2. The assigned magnetic compass heading to be flown by aircraft during the delivery phase of an air strike. (Joint Pub 1-02)

attack position—The last position occupied by the assault echelon before crossing the line of departure. (Joint Pub 1-02) Last covered and concealed position used by an attack helicopter to deploy and move into firing position for target engagement.

C

checkpoint—Geographical location on land or water above which the position of an aircraft in flight may be determined by observation or by electrical means. (Joint Pub 1-02) (Part three of a four-part definition.)

close air support—Air action against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces. (Joint Pub 1-02)

close-in fire support—Attack helicopter air delivery of forward firing ordnance in such proximity to friendly forces as to support the fire and movement of those forces.

combat air patrol—An aircraft patrol provided over an objective area, over the force protected, over the critical area of a combat zone, or over an air defense area, for the purpose of intercepting and destroying hostile aircraft before they reach their target. (Joint Pub 1-02)

Combat Service Support Coordination Center—The agency established by the CSS commander to coordinate the activities of each subordinate unit and to provide correlated information concerning CSS operations and status to the appropriate commanders. It is the CSS equivalent to the combat operations center (COC) established by maneuver commanders to control and coordinate tactical operations.

command and control aircraft—A tactical mission aircraft for the use of the helicopter coordinator (airborne) and helicopterborne unit commander to coordinate and control tactical helicopter assaults, troop movements, commander's reconnaissance, and other related missions.

communications-electronics operations instructions—An instruction containing details on call sign assignments, frequency assignments, codes and ciphers, and authentication tables and their use. The CEOI is designed to complement information contained in operational unit communication SOPs or the Annex K to the operation order. The most common version of CEOI in use by the Marine Corps is the automated communications-electronics operations instructions (ACEOI), produced by NASA.

contour flight—See terrain flight.

control point—A position marked by a buoy, boat, aircraft, electronic device, conspicuous terrain feature, or other identifiable object which is given a name or number and used as an aid to navigation or control of ships, boats, or aircraft. (Joint Pub 1-02) (Part two of a three-part definition.)

covering patterns—A pattern selected by the gunship flight leader with regard to terrain, weather, friendly and enemy situation which provides maximum cover for the transport helicopter during its approach, landing, or departure. The selected pattern should provide maximum area neutralization through the combination of potential firepower and overlapping fields of fire.

D

data link—The means of connecting one location to another for the purpose of transmitting and receiving data. (Joint Pub 1-02)

departure point—(1) A navigational check point used by aircraft as a marker for setting course. (2) In amphibious operations, an air control point at the seaward end of the helicopter approach lane system from which helicopter waves are dispatched along the selected helicopter approach lane to the initial point. (Joint Pub 1-02)

direct air support center—A subordinate operational component of a tactical air control system designed for control and direction of close air support and other tactical air support operations, and normally collocated with fire-support coordination elements. (Joint Pub 1-02)

drop zone—A specific area upon which airborne troops, equipment, or supplies are airdropped. (Joint Pub 1-02)

E

effective range—The maximum distance at which a weapon may be expected to inflict casualties or damage.

electromagnetic intrusion—The intentional insertion of electromagnetic energy into transmission paths in any manner with the objective of deceiving operators or of causing confusion. (Joint Pub 1-02) See intrusion.

electronic countermeasures—See electronic warfare. (Joint Pub 1-02) Also, the impairment of enemy electronic detection, control, or communications devices/systems through deliberate jamming or deception.

electronic warfare — Military action involving the use of electromagnetic energy to determine, exploit, reduce, or prevent hostile use of the electromagnetic spectrum and action which retains friendly use of the electromagnetic spectrum. There are three divisions within electronic warfare:

a. **electronic countermeasures.** That division of electronic warfare involving actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum. Also called ECM. Electronic countermeasures include:
   (1) **electronic jamming.** The deliberate radiation, reradiation, or reflection of electromagnetic energy for the purpose of disrupting enemy use of electronic devices, equipment, or systems. See also jamming.
   (2) **electronic deception.** The deliberate radiation,reradiation, alteration, suppression, absorption, denial, enhancement, or reflection of electromagnetic energy in a manner intended to convey misleading information and to deny valid information to an enemy or to enemy electronics-dependent weapons. Among the types of electronic deception are: **(a) manipulative electronic deception**—Actions to eliminate revealing, or convey misleading, telltale indicators that may be used by hostile forces. **(b) simulative electronic deception**—Actions to represent friendly notional or actual capabilities to mislead hostile forces. **(c) imitative electronic deception**—The introduction of electromagnetic energy into enemy systems that imitates enemy emissions.

b. **electronic counter-countermeasures**—That division of electronic warfare involving actions taken to ensure friendly effective use of the electromagnetic spectrum despite the enemy's use of electronic warfare. Also called ECCM.

c. **electronic warfare support measures**—That division of electronic warfare involving actions taken under direct control of an operational commander operational commander to search for, intercept, identify, and locate sources of radiated electromagnetic energy for the purpose of immediate threat recognition. Thus, electronic warfare support measures (ESM) provide a source of information required for immediate decisions involving electronic countermeasures (ECM), electronic counter-countermeasures (ECCM), avoidance, targeting, and other tactical employment of forces. Electronic warfare support measures data can be used to produce signals intelligence (SIGINT), both communications intelligence (COMINT) and electronics intelligence (ELINT). (Joint Pub 1-02)

electronics intelligence —Technical and intelligence information derived from foreign noncommunications electromagnetic radiations emanating from other than nuclear detonations or radioactive sources. (Joint Pub 1-02)

emission control —The selective and controlled use of electromagnetic, acoustic, or other emitters to optimize command and control capabilities while minimizing, for operations security (OPSEC), detection by enemy sensors; to minimize mutual interference among friendly systems; and/or to execute a military deception plan. (Joint Pub 1-02)

essential elements of information —The critical items of information regarding the enemy and the environment needed by the commander by a particular time to relate with other available information and intelligence in order to assist in reaching a logical decision. (Joint Pub 1-02)

evasive maneuver — A defensive maneuver that has been established through various studies which allows an aircraft commander to operate against a particular threat, and if done successfully, would increase the possibility for survival and mission success.

F

final approach —The last phase of a landing during which the helicopter is committed to a landing zone, the landing zone is entered, and the helicopter transitions to the appropriate altitude and airspeed to establish either a landing or hovering flight. Generally, any type of final approach can be married to any type of initial approach if tactical necessity requires.

fire support coordination center — A single location in which are centralized communications facilities and personnel incident to the coordination of all forms of fire support. (Joint Pub 1-02)

firing positions — A position occupied by an individual attack helicopter in order to engage targets. Firing positions may or may not be located on the attack position.

flight coordinator — An experienced gunship commander of the escort flight is normally designated by the helicopter transport commander to coordinate assets during the insertion and extraction by transport helicopters. Unless specifically briefed otherwise, the senior gunship commander of the flight will assume the following duties of the flight coordinator: en route flight clearances, landing zone identification, landing zone prep, communications coordination, and others directed by the transport commander. Utilization of flight coordinators is particularly effective on resupply and MEDEVAC missions when expediency is necessary; on reconnaissance insertions/extractions when minimum transport helicopter exposure is desirable; and on assaults when multiple landing zones are used.

flight leader — A pilot qualified in model (PQM) or helicopter aircraft commander (HAC) so designated in writing by the helicopter unit commander. In flights, including escorts, the overall flight leader is the helicopter transport commander.

forward air controller — An officer (aviator/pilot) member of the tactical air control party who, from a forward ground or airborne position, controls aircraft in close air support of ground troops. (Joint Pub 1-02) In the Marine Corps, a forward air controller is a naval aviator or naval flight officer, within the tactical air control party, who is specifically trained and qualified to exercise control from the ground of air support of ground forces. (FMFRP 0-14)

forward air controller (airborne) — A specifically trained and qualified aviation officer who performs the dual tasks of conducting aerial reconnaissance/surveillance and exercising control from the air of aircraft engaged in close air support of ground troops. (FMFRP 0-14)

forward arming and refueling point — A temporary facility, organized, equipped, and deployed by an aviation commander, and normally located in the main battle area closer to the area of operation than the aviation unit's combat service area, to provide fuel and ammunition necessary for the employment of aviation maneuver units in combat. The forward arming and refueling point permits combat aircraft to rapidly refuel and rearm simultaneously. (Joint Pub 1-02)

forward edge of the battle area — The foremost limits of a series of areas in which ground combat units are deployed, excluding the areas in which the covering or screening forces are operating, designated to coordinate fire support, the positioning of forces, or the maneuver of units. (Joint Pub 1-02)

forward line of own troops — A line which indicates the most forward positions of friendly forces in any kind of military operation at a specific time. The **forward line of own troops** normally identifies the forward location of covering and screening forces. (Joint Pub 1-02)

G

glide angle indicator light — A helicopter portable lighting set composed of one glide angle indicator light and eight airfield emergency portable marker lights, utilized to assist helicopters in conducting safe landings over hazardous obstacles during periods of darkness.

ground alert — That status in which aircraft on the ground/deck are fully serviced and armed, with combat crews in readiness to take off within a specified short period of time (usually 15 minutes) after receipt of a mission order. (Joint Pub 1-02)

ground fire — Small arms ground-to-air fire directed against aircraft. (Joint Pub 1-02)

H

H-hour — The specific hour on D-day at which a particular operation commences. The operation may be the commencement of hostilities; the hour at which an operation plan is executed or to be executed (as distinguished from the hour the order to execute is issued; the hour that the operations phase is implemented, either by land assault, parachute assault, amphibious assault, air or naval bombardment. The

highest command or headquarters coordinating the planning will specify the exact meaning of H-hour with the aforementioned definition. Normally, the letter H will be the only one used to denote the above. However, when several operations or phases of an operation are being conducted in the same area on D-day, and confusion may arise through the use of the same hour designation for two or more of them, any letter of the alphabet may be used except A, C, D, E, J, M, or others that may be reserved for exclusive use. (Joint Pub 1-02)

helicopter aircraft commander—A qualified pilot in command of a multipiloted helicopter (CH46 or CH53).

helicopter availability table—The planning document providing the landing force and helicopterborne unit commanders with basic information regarding helicopter availability for amphibious helicopterborne assaults. Information contained within this table includes helicopter units, projected number of helicopters available for initial and subsequent lifts, tentative load capacities, and amphibious shipping upon which the helicopters are transported.

helicopter coordinator airborne—A naval aviator, operating from an aircraft, who has been delegated authority to perform specific coordination and control functions of helicopter operations, and provide situational awareness to the assault support force, during a specific helicopter evolution. The HC(A) may: (1) directly support a mission commander; (2) function as an airborne extension of the helicopter direction center (HDC) or direct air support center (DASC), when a DASC or HDC are in support of the mission commander; (3) be employed as an extension of the DASC or HDC for the purpose of coordinating assault support activities that do not warrant the assignment of a mission commander. If employed in conjunction with the TAC(A) or FAC(A), and no mission commander is assigned, the relationship between the two will be established by the tactical air commander or his designated representative. When an HC(A) has not been designated, the helicopter transport commander shall discharge the duties of the HC(A) within the limits of his authority.

helicopter direction center—In amphibious operations, the primary direct control agency for the helicopter group/unit commander operating under the overall control of the tactical air control center. (Joint Pub 1-02)

helicopter employment and assault landing table—A planning document prepared jointly by the helicopter and helicopterborne unit commanders. It included detailed plans for the movement of helicopterborne troops, equipment, and supplies. It is the landing timetable for the helicopter movement uniting scheduled units with numbered flights and waves and provides the basis for the helicopter unit's flight schedule. It is used by the appropriate air control agency to control the helicopter movement.

helicopter transport commander—An experienced aviator in command of the transport helicopters taking part in a helicopterborne mission. He may function as the HC(A) in assaults when no HC(A) is assigned.

helicopter unit commander—The senior Marine aviator designated commander of the helicopter unit who is responsible for its performance.

helicopter wave—One or more helicopters grouped under a single leader scheduled to land in the same landing zone at approximately the same time. A helicopter wave is composed of one or more flights and can consist of helicopters from more than one ship.

helicopter wave and serial assignment table—A planning document utilized in helicopterborne operations describing the tactical unit, equipment, and supplies that are to be loaded into each helicopter. The table identifies each heliteam with its assigned serial number and the serial number with the flight and wave.

helicopterborne assault—The landing of helicopterborne forces within or adjacent to an objective area for the purpose of occupying and controlling the objective area and positioning units for action against hostile forces.

helicopterborne unit commander—The ground officer who has been designated to be the commander of the helicopterborne force and who is charged with the accomplishment of the ground tactical plan.

high frequency (HF)—3 MHz to 30 MHz.

holding point—A geographically or electronically defined location used in stationing aircraft in flight in a predetermined pattern in accordance with air traffic control clearance. (Joint Pub 1-02)

hostile area—Area of known enemy concentration in which intense opposition can be expected. It differs from an insecure area in that no friendly forces are in the immediate area, landing zones are unprotected, and fixed-wing preparation fire is normally mandatory.

hovering fire—Fire delivered from any altitude that permits effective target engagement while the firing aircraft remains stationary over a point on the ground.

I

initial approach—**a.** That part of an instrument approach procedure in which the aircraft has departed an initial approach fix or point and is maneuvering to enter the intermediate or final approach. It ends at the intermediate fix or point or, where no intermediate segment is established, at the final approach fix or point. **b.** That part of a visual approach of an aircraft immediately prior to arrival over the airfield of destination, or over the reporting point from which the final approach to the airfield is commenced. (Joint Pub 1-02)

initial point—**1.** The first point at which a moving target is located on a plotting board. **2.** A well-defined point, easily distinguishable visually and/or electronically, used as a starting point for the bomb run to the target. **3. airborne**—A point close to the landing area where serials (troop carrier air formations) make final alterations in course to pass over individual drop or landing zones. **4. helicopter**— An air control point in the vicinity of the landing zone from which individual flights of helicopters are directed to their prescribed landing sites. **5.** Any designated place at which a column or element thereof is formed by the successive arrival of its various subdivisions, and comes under the control of the commander ordering the move. (Joint Pub 1-02)

initial terminal guidance—A mission normally assigned to reconnaissance units to provide the helicopter coordinator (airborne) with information resulting from prelanding reconnaissance. They establish and operate signal devices for guiding the initial helicopter waves from the initial point to the landing zone.

interference—Any electromagnetic disturbance which interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics or electrical equipments.

intrusion—See electromagnetic intrusion. (Joint Pub 1-02)

J

jamming—See electronic warfare.

jinking—A sudden turn or series of sudden turns for the purpose of evading a threat weapons system.

L

L-hour—The time of landing of the first wave of a helicopterborne unit.

laager point—Secure locations on the ground designated by aviation units utilized for the rendezvous, marshalling, or positioning of flights of aircraft between missions or awaiting completion or activation of an assigned mission. Other than communications, no other support should be required. These sites may be isolated and independent or they may be adjacent to airfields, facilities, or FARPs.

landing point—A point within a landing site where one helicopter or vertical take-off and landing aircraft can land. (Joint Pub 1-02)

landing site—1. A site within a landing zone containing one or more landing points. (Joint Pub 1-02)

landing zone—A specified zone within an objective area used for the landing of aircraft (FM 101-5-1)

landing zone preparation—A mission conducted in preparation for a helicopterborne landing and used to neutralize areas in and around the zone, to clear the zone of obstacles, and to destroy booby traps.

low frequency—30 kHz to 300 kHz.

low level flight—Flight conducted at constant airspeed and indicated altitude at which detection or observation of an aircraft or of the points from which and to which it is flying is avoided or minimized. The route is preselected and conforms generally to a straight line.

M

Marine Air-Ground Task Force—A task organization of Marine forces (division, aircraft wing, and service support groups) under a single command and structured to accomplish a specific mission. The Marine Air-Ground Task Force components will normally include command, ground combat, aviation combat, and combat service support elements (including Navy Support Elements). Four types of MAGTFs which can be task-organized are the Marine Expeditionary Force, Marine Expeditionary Brigade, Marine Expeditionary Unit, and Special Purpose Force (SPF). The four elements of a Marine Air-Ground Task Force are command element, ground combat element, aviation combat element, and combat service support element.

missile engagement zone—The geographical, three-dimensional subdivision of the destruction area where surface-to-air missiles have primary responsibility for destruction of the airborne threat.

mission brief—The mission brief is the final phase of the planning effort and should include, as attendees, all mission participants. This brief will set forth the concept of operations, ground tactical plan, scheme of maneuver from the pickup zone through the objective, and specific details concerning mission, coordination, and execution.

mission commander—A properly qualified naval aviator or naval flight officer designated by appropriate authority. The mission commander is utilized when separate aircraft formations, each led by its own formation leader, are required for a common support mission or whenever a formation of four or more aircraft must perform a multiple sortie mission. The mission commander is responsible for all phases of the assigned mission except those aspects of safety of flight which are related to the physical control of the aircraft and fall within the prerogative of the pilot in command. Mission commander qualifications are outlined in appropriate NATOPS flight manuals.

mission, enemy, terrain and weather, troops-time available (METT-T)—Factors to be considered in estimating the situation during the planning of a military operation.

mission precedence—A designation assigned to a mission to indicate its priority or urgency of accomplishment.

a. **emergency mission**—Mission involves safety of U.S. or other friendly lives or requires immediate transport of vital supplies or equipment, or urgently required resupply ammunition or medical supplies.
b. **mandatory mission**—Emergency in nature and involves possible loss of human life or national prestige to the extent that normally unacceptable risks will be taken in its accomplishment.
c. **priority MEDEVAC**—Evacuation of seriously wounded, injured, or ill personnel who require early hospitalization but whoseimmediate evacuation is not a matter of life or death.
d. **priority mission**—Tactical movement of equipment or personnel whose excessive delay would jeopardize successful mission accomplishment. It includes logistic operations where delays would result in excessive material loss through spoilage or seizure by the enemy.
e. **routine MEDEVAC**—Evacuation of deceased personnel, a patient with a minor illness, or a patient requiring transfer between medical facilities for further treatment.
f. **routine mission**—Administrative or tactical transport of personnel or equipment, where time is not a critical factor and delay will not endanger lives or loss of material.
g. **urgent MEDEVAC**—Evacuation of critically wounded, injured,or ill personnel who require early hospitalization and whose immediate evacuation is a matter of life or death.
h. **moving hovering fire**—Fire delivered from any altitude that permits effective target engagement while the firing aircraft moves across the ground below the airspeed of effective translational lift.

N

NATO standardization agreement—The record of an agreement among several or all the member nations to adopt like or similar military equipment, ammunition, supplies, and stores; and operational, logistic, and administrative procedures. National acceptance of a NATO allied publication issued by the Military Agency for Standardization may be recorded as a Standardization Agreement (also called STANAG). See also standardization. (Joint Pub 1-02)

naval aviation observer—A ground officer trained as an air observer operating from an observation aircraft whose primary mission to provide tactical commanders with information relative to the enemy forces, terrain, hydrography, and to direct supporting fires for ground forces to include artillery, naval gunfire, and close air support.

O

orbit point—A geographically or electronically defined location used in stationing aircraft in flight during tactical operations when a predetermined pattern is not established. (Joint Pub 1-02)

P

pa—Probability of acquisition.

passive homing guidance—A system of homing guidance wherein the receiver in the missile utilizes radiation from the target.

pd—Probability of detection.

penetration control point—The point where helicopter waves penetrate a hostile coastline.

permissive threat—The Threat, although sophisticated for short periods of time, is predominantly at a level which permits combat operations and support to proceed along traditional lines without prohibitive interference. Associated tactics and techniques will not normally require extraordinary measures for preplanned or immediate support.

pickup zone—The zone in which helicopters land to pick up troops and supplies for movement to the landing zone.

pickup zone control officer—The pickup zone control officer organizes, controls, and coordinates operations in pickup zones.

pilot qualified in model—A qualified pilot in command of a single-piloted helicopter.

pk—Probability of kill.

pk/h—Probability of kill given a hit.

pt—Probability of tracking.

R

rules of engagement—Directives issued by competent military authority which delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagement with other forces encountered (also called ROE). (Joint Pub 1-02)

S

safe area—A designated area in hostile territory that offers the evader or escapee a reasonable chance of avoiding capture and of surviving until he can be evacuated. (Joint Pub 1-02)

scheduled waves—Formations of landing craft, amphibious vehicles, landing ships, or helicopters carrying the assault units of the landing force whose time and place of landing are predetermined.

secure area—An area that has not received hostile fire for 72 hours and in which helicopters will most likely not be subject to fire during the approach, landing, takeoff, or departure.

sophisticated threat—The Threat posed by a hostile force which would entail the integrated massing of heavy combat power to include electronic warfare, surface-to-air weapons, and other anticommand and control measures so as to seriously degrade the capability to provide the necessary support to Marine Corps forces.

special patrol insertion and extraction system—The system is a long line with special fastening devices on one end that allows several men to attach themselves and which then can be used to

rapidly lift the individuals out of or into areas where a helicopter cannot land.

special purpose force—A MAGTF organization. These forces are small, task-organized MAGTFs configured to accomplish missions for which the MEF, MEB, and MEU are not appropriate. They can be configured, trained, and equipped to conduct a wide variety of conventional and other operations.

standardization agreement—See NATO standardization agreement (also known as STANAG). (Joint Pub 1-02)

supporting arms coordination center—A single location on board an amphibious command ship in which all communication facilities incident to the coordination of fire support of the artillery, air, and naval gunfire are centralized. This is the naval counterpart to the fire support coordination center utilized by the landing force. (Joint Pub 1-02)

suppressive fire—Fires on or about a weapons system to degrade its performance below the level needed to fulfill its mission objectives, during the conduct of the fire mission. (Joint Pub 1-02)

T

tactical air command center—The principal U. S. Marine Corps air operation installation from which aircraft and air warning functions of tactical air operations are directed. It is the senior agency of the Marine Corps Air Command and Control System from which the Marine Corps tactical air commander can direct and control tactical air operations and coordinate such air operations with other Services. (Joint Pub 1-02)

tactical air control party—A subordinate operational component of a tactical air control system designed to provide air liaison to land forces and for the control of aircraft. (Joint Pub 1-02)

tactical air coordinator (airborne)—An officer who coordinates, from an aircraft, the action of combat aircraft engaged in close support of ground or sea forces. (Joint Pub 1-02)

tactical air direction center—An air operations installation under the overall control of the tactical air control center (afloat)/tactical air command center, from which aircraft and air warning service functions of tactical air operations in an area of responsibility are directed. (Joint Pub 1-02)

tactical air operations center—A subordinate operational component of the Marine Air Command and Control System designed for direction and control of all en route air traffic and air defense operations, to include manned interceptors and surface-to-air weapons, in an assigned sector. It is under the operational control of the Tactical Air Command Center. (Joint Pub 1-02)

target aquisition—The detection, identification, and location of a target in sufficient detail to permit the effective employment of weapons. (Joint Pub 1-02)

terrain flight—Flight close to the earth's surface during which airspeed, height and/or altitude are adapted to the contours and cover of the ground in order to avoid enemy detection and fire. (Joint Pub 1-02)

U

ultrahigh frequency—A frequency of 300 to 1,000 MHz.

unsecured area—An area in which helicopters may be subject to hostile fire during approach, landing, takeoff, or departure. An unsecured landing zone is one in which fire has been received within the last 72 hours.

V

very high frequency—A frequency of 30 to 300 MHz.

very low frequency—A frequency below 30 kHz.

vital area—A designated area or installation to be defended by air defense units. (Joint Pub 1-02)

W

wave rendezvous point—A position designated for assembling loaded helicopters. It is located at a given altitude and position relative to the departure point.

Z

zip lip—A condition which may be prescribed during flight operations regarding radio transmission. Only transimissions requisite to safety of flights are permitted.

ZIPPO brief—Zone Inspection, Planning, Preparation, and Operation (ZIPPO) brief—a face-to-face conference of the ZIPPO team members. This brief will discuss all pertinent items, including aircraft performance in relation to anticipated tactic, threat, and load factors. A mission brief may preclude the need for a ZIPPO brief.

ZIPPO team—A team, consisting of the helicopterborne unit commander, the helicopter element commander, and key staff members, who jointly inspect, prepare, and plan helicopterborne operations in which their units are participating.

Appendix L

References

1. Joint Publication

Joint Pub 3-02.1	Joint Doctrine for Landing Force Operations

2. U.S. Army Field Manual

FM 90-4	Air Assault Operations

3. U.S. Navy/U.S. Marine Corps Publications

NWP 22-3	Ship-to-Shore Movement
NWP 55-9-ASH, Vol. 1 (Rev. E)/FMFM 5-3	Assault Support Helicopter Tactical Manual (U)

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