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FIELD MANUAL

ARMY AVIATION UTILIZATION

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FIELD MANUAL
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DEPARTMENT OF THE ARMY
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*This manual supersedes FM 1-100, 18 August 1969, and FM 1-110, 8 July 1966.

CHAPTER 1

PURPOSE AND SCOPE

1-1. Purpose

This manual provides commanders with the basic information needed to effectively utilize Army aviation in support of operations.

1-2. Scope

a. This manual discusses Army aviation operations only to the depth required to familiarize commanders with Army aviation capabilities. Appendix A contains a list of publications recommended for users desiring more detailed information on specific subjects discussed in this manual.

b. Guidance is provided for combat operations in:

(1) General war, to include employment of and protection from nuclear and chemical munitions.

(2) Limited war.

(3) Cold war, to include stability operations.

1-3. Standardization Agreements

This manual is in consonance with the following international standardization agreements:

TITLE	NATO STANAG	CENTO STANAG	SEATO STANAG
Radiological Survey	2112	2112	2112
Organization and Doctrine for Explosive Ordnance Disposal Operations	2314	----	2314
Friendly Nuclear Strike Warning to Armed Forces Operating on Land	3104	----	3104
Aircraft Marshalling Signals	3117	3117	3117
Air Reconnaissance Request Form	3277	3277	3277
Safety, Emergency, and Signalling Procedures for Tactical Aircraft Operations	3465	----	3465
Tiedown Fittings on Air Transportable Cargo and Airdropped Equipment and Cargo	3548	----	----
Responsibility for the Design and Provision of Adaptors Necessary for the Compatibility of an Air Cargo Loading, Securing, Unloading, or Dropping System	3616	----	----

1-4. Recommendations to Improve Clarity or Accuracy

Users of this manual are encouraged to submit recommended changes and comments to improve the publication. Comments should be keyed to the specific page, paragraph, and line of text in which the change is recommended. Reasons for change will be provided for each comment to insure understanding and complete evaluation. Comments should be prepared using DA Form 2028 (Recommended Changes to Publications) and forwarded direct to the Commanding Officer, US Army Combat Developments Command Aviation Agency, Fort Rucker, Alabama 36360. Originators of proposed changes which would constitute a significant modification of approved Army doctrine may send an information copy, through command channels, to the Commanding General, US Army Combat Developments Command, Fort Belvoir, Virginia 22060, to facilitate review and followup.

CHAPTER 2

INTRODUCTION

Section I. GENERAL

2-1. Mission of Army Aviation

The mission of Army aviation is to augment the capability of the Army to conduct prompt and sustained combat operations on land. Army aviation accomplishes this mission by providing aviation support to Army organizations at all command levels.

2-2. Requests

Requests for aviation support may originate at any command level. Since most Army aviation resources are controlled at brigade or higher levels, the small unit commander normally must request aviation support through channels. Approval or denial of a request is normally based on priorities established by higher commands. Approved requests are forwarded through channels to the echelon capable of filling the requirement. Where the requested support is beyond the capability or capacity of available Army aviation elements, the request may be passed to another service for execution. Requests may be—

a. Immediate, as when attack helicopters or aerial field artillery are needed to provide close air support, or assault helicopters are needed to move forces or materiel during an operation in progress.

b. Preplanned, as when sufficient time exists to request aviation support for impending operations. Preplanning, which provides additional time for orderly scheduling of appropriate aircraft, is the preferred method, time permitting.

2-3. Command Relationships

a. In providing support to a ground unit, the aviation unit commander serves as advisor to the ground commander. The aviation commander makes recommendations to the ground commander on the employment of the aviation unit. Based on the ground commander's decision, the aviation commander employs his unit to assist in accomplishing the ground commander's mission.

b. Although the aviator in command of an aircraft is the authority on the technical operation of that aircraft, to include safety in flight practices, the Army commander to whose command the aviation unit is assigned or attached exercises the same command function over the aviator, organization, and equipment as he does over other Army units.

2-4. Liaison

The aviation unit establishes liaison with the supported ground unit. The extent of this liaison depends upon the extent of aviation participation. In the case of an airmobile operation, it is usually necessary for continuous liaison throughout the planning and execution of the operation. This may be accomplished by detailing an aviation unit representative to serve as a special staff officer for the ground commander. Where minimal aviation support is concerned, liaison may be conducted on the spot between the supporting aviation element and the ground unit.

2-5. Branch Proponency

Aviation units are assigned branch proponency based on the functions performed by the unit, e.g., the aerial field artillery battalion is an artillery unit, and assault helicopter companies are infantry units since their primary function is to participate in the assault with infantry. Additionally, some units are assigned proponency based on the primary branch orientation of their parent unit, i.e., infantry proponency for the aviation section, infantry brigade. Appendix C outlines present proponency assignment for aviation units. Appropriate branch manuals provide detailed instructions for operational employment.

2-6. Divisional and Nondivisional Aviation

a. Divisional. Aviation elements that are organic to a division are referred to as divisional aviation elements. These elements are authorized on the basis of each type division's requirement for immediately responsive aviation support. An air-

mobile division has an organic aviation group composed of assault and assault support helicopter units, an air cavalry squadron, and an aerial field artillery battalion. Each infantry and airborne division is authorized as aviation battalion and an air cavalry squadron. Armored and mechanized divisions are authorized an aviation company and an air cavalry troop. Smaller aviation elements organic to some brigades and division artillery are employed in addition to the aviation battalion, company, and air cavalry troop.

b. Nondivisional. Army aviation units and aerial field artillery units assigned to corps and field army are known as nondivisional units. Their function is to provide aviation support which will assist in accomplishing corps or army missions. These nondivisional aviation organizations normally include aircraft elements which are capable of performing aerial reconnaissance and surveillance missions, movement of troops; combat service support airlift; command, liaison, and courier missions; or providing fire support to subordinate divisions. Allocation of these aviation resources to support subordinate elements is normally accomplished through command channels.

2-7. Responsiveness

Immediately responsive aerial mobility is the basic capability which organic aviation provides to the Army commander. This responsiveness enables the commander to plan his mission and establish his priorities as necessary to meet changing situations, rather than requiring him to react to priorities for aviation support established at other command levels. The capability of immediate responsiveness results from—

a. Proximity of Location. Army aviation elements live with the troops in the field in the approximate location in which operations are to be conducted. The habitual location of these elements in or near forward areas enables them to quickly respond when aviation support is required. Also, commanders may position aviation elements in locations favoring specific objective areas to insure responsive support for planned operations.

b. Adaptability to Terrain. Army aviation is organized and equipped to operate in the field army environment. It operates from unimproved areas, relatively unhindered by terrain obstacles. By providing a rapid reaction capability, Army aviation can assist the ground commander in achieving economy of force. By its inherent ability to move forces against enemy-held areas, Army aviation can force an enemy to expend resources to provide for all dimensional security of his rear areas.

2-8. Aviation Unit Security

Aviation units are organized to perform a basic mission of providing aviation support to the ground commander. Normally, they do not contain sufficient personnel to provide a perimeter defense for the unit position. Aviation unit personnel placed in perimeter defense are normally removed from aviation duties, resulting in a reduced operational capability. For this reason, the ground combat units are normally required to provide a perimeter defense or security forces for the aviation unit's position. Whenever practicable, aviation units should collocate with the supported unit, making maximum use of the supported unit's defense perimeters.

2-9. Pathfinder Support

a. A primary mission of Army pathfinders is to provide navigational assistance to Army aircraft operating in designated areas. Pathfinders support normally is provided for aviation units participating in all combat operations. Pathfinders are introduced into operating areas to establish and operate navigation aids to guide aircraft to points such as pickup and landing zones. This support enables the aviation element to more effectively support the ground force.

b. An additional mission of pathfinders is to assist ground forces in preparing and positioning loads. This is one of many ways in which the ground unit can minimize aircraft delays and thus increase the effectiveness of aviation support to the ground unit.

2-10. Sling Loading Equipment

The S4/G4 of the ground unit is responsible for requesting, maintaining, and providing all sling and web equipment required for external loads which are to be airlifted by Army helicopters. The ground unit is also responsible for the rigging and hookup of loads. Available pathfinder personnel assist in this effort, mission permitting. Aviation units may provide training for ground units on sling loading equipment when requested.

2-11. Fires Delivered by Army Helicopters

a. Within the definition of close air support, as defined in JCS Pub 1, the army includes these fires delivered in close proximity to friendly forces by attack helicopters, scout helicopters, and door

gunners on troop carrying helicopters. Army aircraft are integrated into Army organizations and the ground tactical plan. They perform on a duty basis until the unit mission is complete or the task organization is changed. Close air support aircraft provided by other services are subject to outside priorities over which the local ground commander has no control. These aircraft must be allocated, planned on a task-by-task basis, and are acquired through a multi-service air-ground system. The portion of close air support rendered by Army aircraft differs fundamentally from the more transient type provided from outside the Army.

b. The term "direct aerial fires" is used to delineate those fires delivered by Army aircraft in close proximity to friendly troops. Close air support is a generic term, with direct aerial fires being an included but more specific term to describe the close air support fires delivered by Army helicopters.

Section II. ARMY AIRSPACE PRINCIPLES

2-12. Airspace Coordination

The system for coordination of airspace over the combat zone maximizes all combat operations, prevents mutual interference, and provides maximum flexibility consistent with safety to all services having weapons systems and using airspace. To accomplish this principle in the division area of responsibility, maximum use is made of SOP's and employment techniques to avoid conflict between the various airspace users. No attempt is made to maintain position and flight path information on all single aircraft by an air traffic control element. However, an advisory element is provided at division artillery and each direct support field artillery battalion's fire direction center, in addition to the division Flight Coordination Center (FCC). In the divison, the primary airspace coordination element is the Airspace Control Element (ACE). It is the focal point for division airspace coordination and is concerned primarily with the preplanned use of division airspace. The ACE functions under the supervision of the G3 and coordinates use of division airspace by Army aviation, air defense, field artillery, and Air Force aircraft. The ACE promulgates information on prohibited or restricted air defense areas and other restrictions imposed on air traffic by the commander or higher headquarters. The division commander is the primary control authority for the division and exercises control by promulgating roles for the use of airspace over the division required for conduct of ground combat operations. Direct control over individual airspace users during combat operations will be exercised by the maneuver unit commander. He decides which support system has priority and orchestrates the use of artillery, attack helicopters, and the tactical air force supporting him. For multiple aircraft flights, airmobile operations, or large resupply operations, routes and altitudes will be coordinated in the ACE acting in concert with other elements in the division Tactical Operations Center (TOC); and necessary corridors will be established to preclude conflict among artillery, air defense, and aviation operations.

2-13. Freedom of Use

The land component commander habitually requires freedom of use of the airspace immediately over the field army area.

2-14. Positive Control

Unless there are overriding tactical considerations, the operation of Army aircraft within the combat zone must be free of constraints. Only in the most severe situation should positive control by any Service be introduced.

2-15. Extent of Airspace

The extent of airspace required by the land component commander to employ organic aircraft and weapons is dictated by the situation and will vary from time to time and theater to theater.

Section III. CAPABILITIES AND LIMITATIONS

2-16. Capabilities

Organic aviation provides the ground commander with responsive aerial mobility. This mobility results from the inherent speed of aircraft, the ability of aircraft to overfly obstacles, and the ability to operate well forward and from unprepared areas. Aviation elements provide personnel to advise the commander on the capabilities, limitations, and resources of available aviation elements. Tasks that aviation units are capable of performing include the following:

a. Adjustment of fire.
b. Aerial photography.
c. Aeromedical evacuation.

d. Airlift of materiel.
e. Airlift of personnel.
f. Chemical agent delivery.
g. Courier flights.
h. Close air support (direct aerial fires).
i. Battlefield illumination.
j. Message drop and pickup.
k. Psychological operations support.
l. Radiological survey.
m. Radio retransmission.
n. Reconnaissance and surveillance.
o. Search and rescue.
p. Aircraft recovery.
q. Topographic survey.
r. Wire laying.
s. Electronic warfare support measures (EWSM).
t. Electronic countermeasures (ECM).
u. Counterbattery.

2-17. Limitations

Limitations to aviation operations include—

a. Vulnerability to enemy air defense measures including enemy aircraft.

b. Vulnerability of aircraft on the ground (as in parking, refueling, and maintenance areas) to enemy actions.

c. High volume logistic support requirements resulting from high consumption rates for POL and ammunition.

d. Relatively high maintenance support requirements.

e. Effects of adverse weather.

f. Limitations common to night operations.

g. Load-carrying capability.

CHAPTER 3

FUNDAMENTALS OF EMPLOYMENT

Section I. EMPLOYMENT CONSIDERATIONS

3-1. General

The ground commander utilizes available aviation elements as necessary to increase the effectiveness of his force. The aviation unit commander is the ground commander's most knowledgeable advisor on the capabilities and limitations of the aviation unit.

3-2. Employment Considerations

The efficient employment of aviation is based upon the following considerations:

a. Economy of Utilization. Since there are seldom enough aviation assets to satisfy all requirements, most aviation support is allocated on a priority basis. To assist in alleviating the shortage, commanders should request aviation support only when a requirement cannot be met by other means—time and mission permitting.

b. Immediate Availability. The opportunity to employ aviation to the maximum advantage may come suddenly. This requires that supporting aviation units be immediately available and responsive to the ground commander's desires. This often results in diversion of aircraft from an assigned mission to participate in missions having higher priorities.

c. Freedom of Utilization. Freedom of utilization permits the commander to employ organic, attached, or supporting aviation units in such a manner as to contribute to the accomplishment of the mission.

d. Tactical Integrity. Whenever practicable, tactical integrity is maintained for the aviation unit and the ground unit during operations. This integrity can be achieved by using an aviation company to airlift the assault elements of an infantry company, or by using an aviation battalion to airlift the assault elements of an infantry battalion. Although not always practicable, it is highly desirable that the unit to be lifted be trained beforehand with the aviation unit which is to perform the lift.

3-3. Factors Affecting Employment

The following factors should be considered in planning an operation involving aviation support:

a. Mission. The mission of the aviation unit is based on the mission of the ground unit. Army aviation support must be integrated with and based upon the ground tactical plan. To insure availability of sufficient aircraft for all operations, future missions must be considered and priorities established for use of aircraft.

b. Enemy. The location, disposition, and capabilities of the enemy—especially his air defense and air offensive capabilities—must be considered. The neutralization of enemy fires (flak suppression) en route to and in the objective area will reduce losses of aircraft and ground troops. In any case, the presence of a significant enemy air defense and radar surveillance will have a major impact on Army aviation flight tactics.

c. Weather. Weather is important in planning the employment of aviation units. Low ceilings and limited visibility, which can limit aircraft operations, can also reduce the effectiveness of the enemy's visually directed air defense weapons. Other considerations should include provisions for alternate courses of action, such as the use of ground means of mobility and resupply and on occasion postponement of the operation, in case severe weather conditions threaten to reduce aircraft operations.

d. Terrain. Terrain features favoring aviation support must be considered. Sites for pickup and landing zones must be available, and navigation aids, if used, must be located where the terrain will not interfere with signal transmissions. Although helicopters can and do operate in unimproved areas, engineer support may be required for helicopter operations in extremely rough terrain areas.

e. Training. Where practicable, aircraft crewmembers and ground forces should be trained to-

gether. An environment similar to that in which the operation is to be conducted is preferred. This is particularly important in the case of night operations.

f. Airspace Utilization. The airspace immediately above the field army area is used by the aircraft and weapons of all participating forces, including enemy forces. The ground commander being supported by aviation elements also receives support from field artillery, air defense artillery, and the other US services. Coordination of these operations to provide most effective airspace utilization, and to minimize mutual interference, must be considered.

g. Support Requirements. Depending upon the conditions under which aviation support is made available, the ground commander may be required to provide certain logistic and administrative support to the aviation element. The ground unit normally should provide a perimeter defense or a security force for the aviation unit's airfield or position. The extent to which the ground force is expected to support the aviation unit should be clearly stated prior to commencing operations.

h. Aircraft Maintenance. To assure continuing availability of aircraft, close coordination is required among the aviation unit commander, ground unit commander, supporting-maintenance unit commander, aviation unit maintenance officer, and aviation unit operations officer. Proper scheduling of organizational maintenance and, as required, of aircraft into support maintenance facilities is mandatory to prevent a buildup of maintenance requirements which can lead to excessive aircraft downtime. For large-scale operations, personnel and aircraft from maintenance support units are normally allocated for preparation of aircraft for recovery and repair. Appropriate aircraft are normally designated for recovery from assets available or requested from other support units.

i. Security Restrictions. Aircraft employment may be influenced by security restrictions imposed by the commander. These may include radio silence and designation of restricted areas over which flights may not be conducted prior to commencing operations.

Section II. TACTICAL MISSIONS

3-4. General

Tactical missions assigned to Army aviation elements are dependent upon the nature of the operation and the capabilities of the aviation elements.

3-5. Offensive Operations

In offensive operations, Army aviation may perform the following types of missions:

a. Command and control.
b. Observation.
c. Reconnaissance by fire.
d. Flank, point, and rear area security.
g. Airlift of personnel and equipment.
f. Retail delivery of supplies.
g. Air evacuation of patients and prisoners.
h. Conduct of deception operations.
i. Close air support (direct aerial fires).
j. Adjustment of artillery and mortar fire.
k. Radiological survey.
l. Battlefield illumination.
m. Electronic warfare (EWSM/ECM).

3-6. Defensive Operations

In defensive operations, Army aviation may perform the following types of missions:

a. Command and control.
b. Observation.
c. Reconnaissance by fire.
d. Outpost, flank, and rear area security.
e. Airlift of reserves.
f. Retail delivery of supplies.
g. Air evacuation of patients and prisoners.
h. Close air support (direct aerial fires).
i. Adjustment of artillery and mortar fire.
j. Camouflage inspection.
k. Radiological survey.
l. Battlefield illumination.
m. Electronic warfare (EWSM/ECM).

3-7. Retrograde Operations

Retrograde operations may generate the following aviation missions:

a. Command and control.
b. Observation.
c. Armed reconnaissance.
d. Flank security.
e. Airlift of personnel and equipment.
f. Retail delivery of supplies.
g. Movement of reserves.
h. Movement of supply installations.
i. Air evacuation of patients and prisoners.
j. Close air support (direct aerial fires)
k. Adjustment of indirect fires.
l. Radiological survey.
m. Battlefield illumination.
n. Electronic warfare (EWSM/ECM).

CHAPTER 4

COMMAND, CONTROL, AND COMMUNICATIONS

Section I. COMMAND RELATIONSHIPS

4-1. Basic Concept

When an aviation unit is placed in support of a ground unit, the aviation unit commander becomes an advisor to the commander of the ground unit. Since the aviation unit's mission is to support the ground tactical plan, the aviation commander must have a clear understanding of that plan. To achieve this understanding, the aviation commander establishes liaison with the ground commander.

4-2. Status

The assignment status of the supporting aviation unit serves as the basis for the command relationship between the commanders of the ground and aviation units. Categories of assignment are as follows:

a. Organic. Organic assignment is authorized by TOE and is relatively permanent in nature. Under this status, the aviation unit is responsive to requirements of its parent unit on a full time basis.

b. Attachment. Attachment is a temporary status which may be used to transfer command of an aviation unit from one organization to another. An example is the attachment of a nondivisional (corps or army) aviation unit to a division for a time or purpose. Upon attachment, the aviation unit becomes fully responsive to requirements of the organization to which it is attached. Normally, nondivisional aviation units are not attached below division level except for special missions, and then only if the division is operating at a considerable distance from the bulk of its parent force. Attachment imposes full responsibility upon the supported command for the adequacy of the attached unit's plans, operations, training, and support except as otherwise stated in the order directing the attachment. Because of the increased burden imposed by the functions, attachment of aviation units should be made only when absolutely necessary for accomplishment of the mission.

c. Operational Control. Operational control is a status that provides the supported unit commander authority to assign tasks and objectives and to exercise as much direct authority as is necessary to accomplish the mission. The commander exercising operational control may tailor, group, and position forces under his authority as required. Operational control does not include responsibility for support or internal affairs of the supporting unit except when the supporting unit requires such assistance in order to accomplish its mission. Operational control is a desirable relationship in that it imposes the necessary authority and responsibility on both commanders to conduct an operation. In the case of an airmobile operation, the airmobile task force commander will exercise operational control over aviation elements, with control becoming effective at the beginning of the execution phase of the operation.

4-3. Tactical Support Missions

To provide responsive aviation support to maneuver elements, units may be assigned a tactical mission of direct support or general support. An example is the placing of a corps aviation unit in support of a division, or the placing of a divisional aviation unit in support of a brigade. Assignment of direct or general support missions to an aviation unit does not place upon supported commanders responsibilities for command and logistical support of the aviation unit.

a. Direct Support. An aviation unit assigned the mission of direct support answers directly to the supported unit. The method of employment provides for a direct mission request channel between supported and supporting units. The supported unit commander specifies requirements, and the supporting aviation unit commander determines how these requirements are to be filled. The aviation commander positions his unit and coordinates its activities with those of the supported commander as necessary to accomplish the supported commander's mission. However, the avia-

tion commander remains under the command of his parent headquarters and retains certain prerogatives in the conduct of support requested by the supported unit. The aviation commander is responsible for advising on the technical aviation aspects of the support operation, to include aircraft capabilities, weather contingencies, and suitability of flight routes and landing areas as they pertain to technical characteristics of the aircraft. The supported commander has final authority for execution of the plan. Preparation of aviation plans and orders associated with the support mission and establishment of liaison with the supported unit are responsibilities of the supporting unit commander. Service support for the aviation unit remains the responsibility of its parent unit.

b. General Support. An aviation unit assigned the mission of general support furnishes aviation support to a force as a whole. Control and priorities for support are retained by the parent unit or a higher headquarters. The supporting aviation commander prepares his own plans and orders and establishes liaison with supported units. Support of the aviation unit remains the responsibility of its parent organization.

4–4. Aviation Support of Aviation Units

It may also be necessary to assign an aviation unit a mission of supporting another aviation unit. The supporting aviation unit remains under the command of its parent organization, but its flight missions are planned and controlled by the supported aviation unit. The overall mission of both aviation units remains that of providing effective aviation support to the ground unit commander.

4–5. Ground Unit Commander

The ground unit commander assigns to the aviation commander those tasks which are to be accomplished by the aviation unit. Although the decision as to when to release mission supporting aviation units is the responsibility of the ground commander, extensions of aviation support beyond the allocated are subject to approval by higher headquarters. In an airmobile operation, the ground unit commander is designated the airmobile task force commander (AMTF). He is responsible for an airmobile operation and controls both the ground and supporting aviation units.

4–6. Aviation Unit Commander

The aviation unit commander organizes and employs his unit as necessary to accomplish the assigned tasks. In an airmobile operation, the senior aviation unit commander is designated the aviation mission commander. The aviation mission commander is subordinate to the airmobile task force commander and controls the aviation units supporting the airmobile operation.

Section II. COMMAND AND CONTROL

4–7. General

Army aviation assists the commander in exercising command and control of his forces primarily by providing the commander with a superior means of acquiring information, and of communicating with his subordinate commanders.

4–8. Planning

Aerial observation means are used to collect information on activities and troop dispositions for use in planning an operation. The use of aircraft enables the commander to visit and inspect the various elements of his command to insure that preparations are being made in accordance with his policies. Where the commander's reconnaissance is made by aircraft, the commander together with his principal subordinates may examine the actual area in which an operation is to take place. From this aerial vantage point, objectives may be selected and a clear understanding of the planned operation gained by those individuals who will be the major participants.

4–9. Command and Control Helicopter

a. During an operation, the combat unit commander may use a command and control helicopter as an aerial command post from which he observes and issues commands as necessary to meet the requirements.

b. The commander may elect to take with him in the helicopter certain subordinates who will be needed to assist during the operation.

c. The commander and the subordinate who is to assume command in the event the commander is lost, normally the executive officer, should not occupy the same helicopter. Also, the command and control helicopter should be used only for command and control purposes, not to attack targets of opportunity or provide logistic resupply. The occupants of this helicopter are key

individuals whose primary mission is command and control.

d. The command and control helicopter may be equipped with specialized communications equipment to provide means of directing the activities of all command elements. Also, the communications capability may include that required for other occupants of the helicopter to communicate with their supporting activities, such as artillery and Air Force elements.

e. Use of command and control helicopters may be severely curtailed in a hostile air environment.

Section III. AVIATION UNIT COMMUNICATIONS

4–10. Means of Signal Communications

a. Army aircraft are equipped with FM, UHF, VHF, and SSB radios. Ground radios are provided to all aviation key personnel. Additional radios are provided for command posts, air traffic control, crash rescue, and other uses.

b. Radio equipment issued to the aviation unit includes portable and vehicular radio sets in addition to those organic to the aircraft. Portable sets may be carried in aircraft to maintain radio contact while aircraft are shut down. Since ground vehicular sets normally are operated from vehicular power sources, their use is limited to situations and terrain where vehicles may be utilized.

4–11. Radio Communications

a. Primary. The primary means of communication for Army aviation units is radio. Amplitude modulated (AM) and frequency modulated (FM) radios are used extensively for all operations.

b. Amplitude Modulated Radios. Equipment operating in the very high frequency (VHF) and the ultra high frequency (UHF) bands is used primarily for air to ground communications with flight operations centers, airfield control towers, and other traffic regulation facilities. VHF radios are the primary means of radio communication between attack helicopters for air to air coordination. UHF is used as a primary air to air communications link between the aviation commander and the aircraft flight commander, and as a link with other service component aircraft. UHF hand-held sets such as the AN/URC–68 emergency radio are used for air to ground communications between search and rescue aircraft and downed aviators.

c. Frequency Modulated Radios. FM radios provide the primary means of communication between the supporting aviation commander and the supported ground commander. Also, FM radios may serve as the primary air to air communications link for inter-flight control. FM radio equipment is subject to line of sight limitations, causing reception distances to decrease as the equipment is operated closer to the ground. Increasing the range beyond the minimum to establish communication will increase vulnerability to enemy electronic countermeasures and may interfere with other friendly traffic.

d. High Frequency-Single Side Band (HF-SSB). Selected Army aircraft may be equipped with HF-SSB radios. These radios provide non-line of sight short and long range communications. Limitations of this equipment are its weight, size, complex antenna, and the hazard of high voltage on the antennas.

4–12. Wire Communications

Wire is the secondary means of communication by Army aviation units. Generally, it is installed within the aviation unit area, and between the aviation unit and the supported unit if time and distance permit. The decision to establish wire communications depends on the mission and the time available for installation. The supply of wire on hand, the expected resupply, and the future needs also are considered. Helicopter companies have necessary TOE equipment to install and maintain internal wire communication systems. Priority for establishing wire lines of communication is determined by the unit communications officer.

4–13. Messenger Communications

a. Messenger service is used extensively in an aviation base; however, organic aircraft are employed for rapid delivery of maps and documents, and to provide transportation for subordinate commanders and key personnel.

b. When aviation unit locations are fixed, a scheduled air courier service may be established.

4–14. Visual Communications

a. Improvised signalling using available lights to send prearranged messages can be of primary importance to aircraft in formation at night.

By prescribing their use in the communications-electronic operations instructions (CEOI), certain light signals can be used to transmit messages during radio silence or after radio failure.

b. Pyrotechnics, including smoke, are issued in various colors and types. The meanings of certain signals are given in the CEOI. Signals are included for identifying units as friendly, marking LZ, lifting or calling for fires by attack helicopters, marking targets, and identifying the location of downed aircraft to include specifying the need for medical attention.

c. Two general types of panels are issued for communications with the aircraft: Marking and identification panels which are made in bright fluorescent colors; and black and white panels which are used on light and dark backgrounds, respectively. The marking and identification panels may be used to mark positions and identify friendly units as well as to mark LZ. The black and white panels are used in accordance with a combined panel system and panel recognition code in the CEOI. Caution must be exercised when using panels to mark a DZ for helicopter operations. Panels should be securely fastened to the ground or to a fixed surface to keep downwash from the rotor blades from blowing the panels into the control surfaces and thereby damage the helicopter.

d. Aircraft maneuvers may be used for limited air to air and air to ground visual communications. Prearranged signals among aircraft or from aircraft to the ground (used primarily in emergencies or for aircraft identification to radar operators) should be specified in the CEOI.

4-15. Sound Communications

Sound signals and their meaning are prescribed in the CEOI. Rapid and continuous percussion sounds made with the standard gas alarm or improvised devices (iron rails and empty shell cases) are used to warn of CBR attacks. These signals are limited to base areas as they are ineffective in coping with aircraft noise levels.

4-16. Communications Security

a. The heavy reliance of aviation units on radio communication makes them especially lucrative targets for enemy communications intelligence exploitation. This vulnerability necessitates careful planning and implementation of communications security (COMSEC) measures. Communications security consists of physical security, cryptographic security, transmission security, and control of compromising emanations.

b. Of the four categories of COMSEC listed above, transmission security is of greatest concern for aviation units. It should be assumed that the enemy is capable of intercepting, direction finding, and analyzing aviation radio communications and using the information derived therefrom as input to his overall intelligence effort or as a basis for the conduct of electronic warfare as discussed in paragraphs 4-17 through 4-19.

c. Communications security is improved by the following measures:

(1) Reduction of the number and length of transmissions to a minimum.

(2) Reduction of transmission power.

(3) Strict circuit discipline and operator training.

(4) Authentication of all messages.

Section IV. ELECTRONIC WARFARE

4-17. Offensive Measures

Army Security Agency (ASA) aviation units have the capability to conduct electronic warfare (EW) operations in support of the ground tactical commander. Their capabilities include signal intelligence (SIGINT), EWSM, and ECM, thereby providing the tactical commander with information on the location and identity of enemy emitters as well as the means of exploiting this information.

4-18. Vulnerability

a. Due to the nature of their operations and extensive use of communication, navigation, and electronic surveillance equipment, aviation units are vulnerable to hostile electronic warfare activities. Radiations emanating from radio, radar, and other electronic emitters are subject to interception, direction finding, and analysis which can be exploited by hostile collection activities as a data source for intelligence and electronic countermeasures i.e., jamming and deception purposes. Since detection and interception can occur at any time electromagnetic energy is radiated, immunity from hostile detection is difficult to attain. Further compounding the problem are the increased effective transmission ranges inherent in air to ground communications.

b. The effects of ECM impact critically on air to air and air to ground communication links.

For example, jamming may degrade the capability to acquire targets or disseminate target information. Jamming can disrupt the exchange of essential information among aviators, ground observers, and terminal guidance personnel. Enemy attempts at entering communication nets with imitative deception may result in misdirection of effort or disorientation of friendly aviators.

4–19. Defense Measures

Maximum defense against hostile electronic warfare activities can be attained through the collective application of COMSEC, proper operating procedures, and electronic counter-countermeasure (ECCM) techniques.

a. The COMSEC practices discussed in paragraph 4–16 are the principal protection against the enemy's SIGINT and electronic warfare support measures such as detection, interception, analysis, and direction finding.

b. ECCM are basically the reactive procedures which must be taken by the operator to minimize the detrimental effects of hostile ECM while assuring continuity of communications.

Section V. OPERATIONS SECURITY

4–20. General

Effective application of operations security measures is dependent upon command emphasis. In an aviation unit, operations security includes all measures taken to deny the enemy knowledge of past, current, and planned operations. Since aviation operations are closely related to the operations of supported ground units, commanders should recognize that enemy knowledge of aviation unit activities may compromise plans for ground as well as aviation operations.

4–21. Training

Operations security should be made a part of training for combat operations, especially when concurrent training of ground and aviation units is conducted.

4–22. Enemy Sources of Information

Possible sources through which the enemy may gain information on friendly activities are as follows:

a. Operational Indicators.

(1) Stereotyped patterns of reconnaissance activity.

(2) Stereotyped patterns of attack (ingress and egress) against specific types of targets or targets in a particular location.

(3) Stereotyped times of preparatory airstrikes and artillery fire in relation to the attack by ground or amphibious forces.

(4) Stereotyped sequences of events comprising the various phases of an operation.

(5) Coordination with civil agencies which do not have proper safeguards for classified information, e.g., air traffic control procedures, and coordination of convoy movement.

b. Sources of Information for Human Intelligence Collectors.

(1) Subverted allied military or indigenous civilian personnel.

(2) Public information releases.

(3) Posting of operations orders, flight plans and schedules, and similar items in insecure areas.

(4) Distinctive emblems or paintings on vehicles and aircraft.

(5) Identification of recipients of supplies being shipped to support an operation, together with operation nicknames, delivery deadlines, etc.

(6) Logistic buildups and pre-positioning of supporting materials and facilities.

(7) Special religious services just prior to operations.

c. Sources of Information from Communications Activities.

(1) Plain language communications covering an entire spectrum of activity associated with planning and pre-execution phases of operations.

(2) Use of unchanging or infrequently changing call signs or call sign suffixes by combat elements and those supporting elements which are active only when an operation is imminent.

(3) Stereotyped message characteristics, such as precedence, addressee patterns, message lengths, codes or cryptosystems which are unique to pre-operations activity.

(4) Use of unchanging frequencies and repetitive use of specific frequencies in given operational areas.

(5) Movement or checkout of communications equipment in an operational area prior to commencement of operations.

(6) Significant increases or decreases in the volume of enciphered communications (not protected by traffic flow security feature).

(7) Transmission at times when communications are not normally active.

(8) Use of unauthorized codes, e.g., home-made codes.

(9) Use of brevity codes in the belief that they provide security.

(10) Use of authorized codes which provide only 24, 48, or 72 hours' protection for encoding information of longer term security.

CHAPTER 5

INTELLIGENCE

Section I. INTRODUCTION

5-1. General

a. Intelligence is the product of information collected from all available sources, refined and confirmed as necessary to apply to the situation. The ground unit commander uses all means available to him to collect information needed to plan and execute his operations. Information is also provided to him through intelligence elements of adjacent and higher headquarters.

b. The effectiveness of surveillance and reconnaissance can be increased through the use of Army aviation. Aerial observers can rapidly cover larger areas in less time than is possible through use of ground means. There are various types of sensors which may be mounted in specially designed aircraft for detailed surveillance and reconnaissance. In addition to organic capabilities, Army aviation elements possessing aircraft specially equipped for aerial surveillance —to include infrared, radar, SIGINT, and EWSM devices—are assigned at corps and army levels. These aircraft provide the field army commander with an efficient means of meeting the aerial surveillance and reconnaissance requirements of his command.

c. Aerial surveillance/reconnaissance does not meet all requirements for intelligence information collection. Vegetation in the area may be so dense as to negate aerial observation efforts. In this case, ground reconnaissance elements may be airlanded near points of interest to proceed on foot to collect the detailed information required.

d. Army aviation also assists in the intelligence effort by providing for the high priority evacuation of prisoners of war or captured documents from forward areas.

5-2. Command and Control

a. Command and control aircraft enable the ground unit commander and selected members of his staff to make their own aerial observation upon which to base tactics for an impending operation.

b. Aerial observation is a continuous and recurring mission of every flight. Every occupant should observe areas over which flights are conducted for information that may be of value. Although crewmembers normally are required by their unit SOP to make and report in-flight observations, passengers may be relatively unaware of their observation responsibilities. Command emphasis by the ground commander alerts passengers to the importance of their functions as aerial observers.

5-3. Counterintelligence

Since Army aircraft flights are conducted at altitudes within range of enemy observers, it should be assumed that every flight will provide information to the enemy. Sudden increases in the frequency of flights over a specific area will cause the enemy to speculate as to why that area is receiving increased attention. Decreases in the frequency of flights over an area may cause the enemy to deliberate as to whether the decrease was due to lack of interest, or the desire of friendly forces to give an impression of lack of interest. Such conflicts, with a resultant alertness, may be avoided if the frequency of flights over an area is continued unchanged.

5-4. Requests for Aerial Reconnaissance/ Surveillance

a. Any commander may request aerial surveillance/reconnaissance missions. The most responsive situation occurs when the unit requiring such a mission has available organic aviation capable of performing the mission. Requests beyond the capability of the using unit's aviation resources are passed through intelligence channels for approval at successively higher levels until arriving at a level capable of accomplishing the mission.

b. Requests arriving at division level are for-

warded to the G2 Air for consolidation priorities and initial airspace coordination. Upon approval, the request is passed to the airspace coordination element (ACE) of the division tactical operations center (DTOC) which allocates the appropriate divisional or supporting aviation unit. If the requirement cannot be met from division assets, the request is passed to the corps G2 Air for consideration. Upon approval, it is passed to the corps ACE for allocation to an Army aviation unit. If the request entails aviation support beyond the capacity or capability of available Army aviation elements, it can be passed to another service for accomplishment.

5-5. Other Services

Air reconnaissance units of supporting services are capable of performing all missions within the entire spectrum of air reconnaissance, both day and night, and in most weather conditions. However, whenever organic Army aviation means can more effectively or more responsively accomplish the mission, they should be used within the limitations of their aircraft and sensors. The determination as to whether the mission will be flown by organic Army assets or passed to the Air Force for accomplishment is made by the G2 Air at the approving level.

a. Liaison with Air Force elements performing intelligence missions in support of the field army is accomplished by personnel of the military intelligence battalion, air reconnaissance support, field army (MIBARS). The mission of MIBARS is to coordinate, process, interpret and disseminate imagery information obtained from Tactical Air Force elements operating in support of the field army or an independent force thereof.

b. Reports of in-flight observations made by Air Force and other service crews are monitored by radios located in the field army at the Air Force tactical air control center, in corps area at the Air Force direct air support center, at each division tactical operations center, and at each brigade, maneuver battalion, and cavalry squadron.

Section II. AERIAL RECONNAISSANCE AND SURVEILLANCE

5-6. General

a. With regard to aerial reconnaissance/surveillance missions, a distinction is generally made as to whether the mission is oriented towards surveillance or reconnaissance. This will depend upon the information to be obtained and the time, size of area, and methods used.

b. Radio direction finding systems mounted on both rotary and fixed-wing aircraft organic to ASA aviation units provide a capability to detect and locate electronic emissions associated with enemy communications and non-communications equipment. ASA aviation units are normally assigned at corps and army level. Heliborne systems are also assigned at the division level with the ASA EW company. Mission tasking for emitter location and identification system (ELIS) support is accomplished through intelligence channels by the ground commander.

5-7. Aerial Reconnaissance

A reconnaissance mission is characterized by its direction toward more specific target areas without the requirement for continuous or systematic coverage. These missions may be developed because of specific information indicating that an area possesses intelligence value, or because current or planned operations indicate a specific area is of significant importance and warrants detailed coverage. Reconnaissance missions may be on a one-time basis only, or periodic, but generally they are more restrictive than surveillance missions in their size and scope of coverage. An aerial reconnaissance mission is ordinarily flown by penetrating the enemy airspace; however, some target areas can be adequately covered from behind the FEBA. Because of the type target involved, the need for greater detail, and the characteristics of the different sensors employed to collect the intelligence information desired, reconnaissance missions generally are flown at lower altitudes. The major advantage of reconnaissance missions is the added detail provided by concentrating the aircraft sensor capabilities over specific targets. Army aviation elements primarily employ the following means to conduct aerial reconnaissance:

a. Visual.

(1) Visual aerial reconnaissance provides a means to rapidly collect intelligence information on enemy dispositions and activities. Fleeting targets can be located for attack by fire support elements. The fires delivered on such targets are normally adjusted by aerial observers. Visual observations cover large areas or may be concentrated on specific locations. These observa-

tions include the examination of routes, roads, trails, railroads, and waterways which may be used, ambushed, or interdicted by the enemy.

(2) Of particular value to the ground commander is the commander's personal reconnaissance. Security requirements permitting this reconnaissance may be conducted by use of a helicopter which enables the commander and selected staff members to view from an aerial vantage point the area in which an operation is to be conducted. If a night operation is envisioned, the commander may elect to make both a day reconnaissance and a night reconnaissance to view the area with his staff under visibility conditions similar to those that will exist during the operation.

b. Photographic. Cameras mounted in aircraft or hand-held cameras may be used to produce permanent record imagery of areas of interest such as those that are to be used by friendly forces, or in which enemy activity is suspected.

c. Infrared. Infrared systems provide both real-time pictorial displays and information recorded on film for later study. Imagery can also be transmitted to ground sensor terminals to provide real-time presentations of the target area. Army aircraft in which infrared equipment is mounted normally are assigned at corps and field army levels and their services may be made available to the ground unit commander upon request through intelligence channels. However, with the advent of newer surveillance, target acquisition, and night operations (STANO) items, this capability will exist at division level. The sensor employed in aerial infrared missions is passive in that it does not emit electromagnetic energy as does radar. Nonetheless, it may be deceived by the enemy's deliberate use of appropriate countermeasures.

5-8. Aerial Surveillance

Aerial surveillance missions provide a systematic watch over the battle area and are characterized by increased flexibility and a greater area of surveillance. Aerial surveillance is continuous over the entire area of interest. It is conducted largely without regard to specific targets, though areas of major interest may be emphasized. A surveillance mission normally is performed with a large area coverage sensor such as radar, infrared cameras, conventional cameras, or by visual observation from higher altitudes so that a large area can be observed. Most aerial surveillance missions are flown on a repetitive basis, with individual flights overlapping to insure complete coverage. Both radar and visual surveillance flights can be flown along or behind the FEBA, parallel to the line of contact. Surveillance overflights of enemy occupied areas are also employed using visual observation or radar coverage to both sides of the line of flight.

a. Characteristics of Aerial Surveillance Mission. Aerial surveillance missions—

(1) Cover large expanses of terrain rapidly and continuously, with a minimum expenditure of aircraft and sensor capabilities.

(2) Maintain continuous surveillance over the entire area while flying over friendly positions.

(3) Detect movement or changes as they take place on the enemy side of the FEBA. This can provide information on possible enemy intentions and alert friendly observers to the necessity for continued surveillance of areas showing change.

(4) Quickly collect information and pass it to intelligence elements for analysis, before targets dissipate.

b. Army Aviation Aerial Surveillance Means.

(1) *General.* Within the aerial reconnaissance/surveillance effort, surveillance missions may be considered a prerequisite to reconnaissance. The commander employs surveillance missions in order to develop indicators of intelligence on specific areas within the overall surveillance plan. Once indicators on specific areas have been disclosed, the commander then employs his reconnaissance assets (i.e., visual, photographic, or infrared) to exploit the potential target for more detailed information.

(2) *Side Looking Airborne Radar (SLAR).* Although visual aerial observation may be considered an aerial surveillance means, the SLAR is most effectively employed in a surveillance role. The SLAR system installed in Army aircraft may scan terrain on either or both sides of the aircraft up to a distance of 90 kilometers. This permits observation without the aircraft having to fly directly over observed areas. Army aircraft in which SLAR equipment is mounted normally are assigned at corps and field army levels and their services may be made available to the ground unit commander upon request through intelligence channels. Since SLAR emits electromagnetic energy, it is susceptible to degradation by hostile electronic jamming and deception.

5-9. Target Acquisition

The acquisition of targets for attack by Army

or other service elements is a major objective of aerial surveillance and reconnaissance operations. Scout and attack helicopters are capable of acquiring and engaging targets, and of acquiring targets for engagement by other fires. In this effort, a chemical personnel detector may be mounted in a helicopter and used to detect the presence of enemy personnel in a specific location for destruction by attack helicopters or other means. Also, aerial observers may acquire targets for artillery engagement and remain in the area to adjust fires against those targets.

5-10. Night Operations

The use of light intensification and night vision devices, in addition to radar, infrared, and photographic equipment, enables Army aviation elements to conduct night observation missions to collect information required by commanders. Where a night combat operation is being planned, it is often advisable for the commander to participate in one or more night aerial observation flights to familiarize himself with the terrain under the conditions which will exist during the actual operation.

Section III. INTELLIGENCE FOR AIRMOBILE OPERATIONS

5-11. General

Intelligence requirements for an airmobile operation include those necessary for the ground operation, plus those needed for aviation operations. Since weather conditions influence an airmobile operation even more than a ground operation, weather intelligence is of critical importance. Enemy air defense units must be accurately located with regard to the initial assault and to followup operations. Additional considerations are—

a. During the planning phase, intelligence analysis is primarily concerned with assessing enemy capabilities and vulnerabilities in the general areas under consideration for airmobile attack. Once the objectives have been selected, area surveillance (consistent with security) must be maintained to insure timely detection of enemy movement or other changes which might jeopardize the mission.

b. Normally, responsibility for collection and assessment of intelligence required for overall planning is retained by commanders at echelons above the assault force. For development of the ground tactical plan, the assault commanders make their intelligence requirements known to higher headquarters.

c. Counterintelligence measures are essential to successful airmobile operations and should be considered in all phases of planning. Information on the location, movement, and massing of aircraft is always of special interest to the enemy. The intelligence officer at each echelon should assist in the development of the unit tactical cover and deception plan to insure that unit counterintelligence measures are employed to support this plan.

d. Aircraft are most vulnerable while on the ground. Detection of loading areas and activities can compromise an operation. Therefore, aircraft should arrive at the loading area at the last possible moment for the initial lift and remain on the ground for the least time commensurate with loading requirements.

5-12. Weather and Terrain

a. Weather. Weather minimums should be established early in the planning to prescribe the least acceptable weather in which the commander will permit the operation to be conducted. Weather minimums are based on the type of aircraft employed, navigational aids available, terrain along the flight routes, and the time of day the operation is to take place. Weather minimums will vary in accordance with factors such as the terrain, expected light conditions, and the degree of risk the commander is willing to accept.

b. Terrain. Analysis of the terrain for an airmobile operation should include consideration of potential landing zones (LZ) and assembly areas in the objective area, air avenues of approach from landing sites to the objective, choice of landmarks to help define flight routes, and vegetation and land forms to provide concealment during the air movement. Emergency landing sites along the route to the objective area must also be considered Obstacles to air landing and tactical movement as well as avenues of approach available for enemy reinforcements or counterattack require special attention in the terrain analysis. Terrain information regarding specific landing zones is required by the air mission commander.

5-3. Enemy

In addition to normal requirements for intelligence, special consideration must be given to hostile air and air defense capabilities. Information pertaining to enemy disposition in and around the landing zones is of primary importance.

CHAPTER 6

MOBILITY

Section I. INTRODUCTION

6-1. General

Mobility is a quality or capability of military forces which permits them to move from place to place while retaining the ability to fulfill their mission. This chapter discusses the use of Army aircraft to provide mobility to a tactical ground force.

6-2. Requirements

Aerial mobility should be used when it enhances mission accomplishment. Where means are limited, aircraft are allocated to ground elements having the greatest requirement.

6-3. Basic Factors

Basic factors involved in the use of Army aircraft to increase mobility include the following:

a. Advantages of aerial mobility over other means.

b. Availability of aircraft of suitable speed, range, and payload.

c. Availability of trained personnel to operate aircraft, provide pathfinder services, and load and unload aircraft.

d. Facilities and terrain characteristics at base airfields, intermediate landing points, and objective areas.

e. Availability of air routes.

f. Enemy air defense capability.

g. Weather and visibility conditions.

h. The practicability of arranging for aircraft to support a ground operation on a contingent basis. This should include arrangements for aircraft to transport reinforcements or to resupply a force if the need arises.

i. Logistical requirements of the aircraft; to include maintenance, rearming, and refueling.

6-4. Staff Procedures

a. Airlift of Troops. The unit requesting airlift is responsible for planning the movement of troops and for the necessary coordination with higher, lower, and adjacent units. Aviation unit planning is based on the plans of the ground unit. In developing the aviation plan, the reverse sequence planning method is used, i.e., ground tactical plan, landing plan, air movement plan, loading plan, and staging plan. To achieve maximum effectiveness, the aviation mission commander or his representative should participate throughout the planning phase as consultant on all matters that pertain to aviation employment. Aircraft normally are assigned on a mission basis, maintaining aviation unit integrity where practicable. For advance planning purposes, SOP for the air movement of troops should be developed at all levels by both ground and aviation units.

b. Airlift of Materiel. Requests for the airlift of materiel in direct support of a tactical operation are made through channels. The decision to use Army aircraft to transport materiel is made by the unit commander based on the overall plan. Within the division, it is normal to allocate aircraft for logistical purposes. Coordination is accomplished between the unit possessing the material and the aviation unit transporting the materiel. The loading of materiel aboard the aircraft is accomplished by the organization responsible for preparing the cargo.

6-5. Liaison

a. The aviation unit provides a liaison officer to assist the ground commander in planning for airlift. The liaison officer's duties include recommending the type and number of aircraft to be used for the lift, and performing necessary coordination to meet special requirements. Although the aviation element is responsible for the efficient utilization of lift aircraft, the tactical considerations of the ground commander may override the requirement for most efficient utilization.

b. Liaison should include that necessary to provide aeromedical evacuation. Although this assistance normally can be provided on request, prior coordination enables aeromedical elements to more efficiently support an operation. Tactical consider-

ations will largely determine the type support required.

6-6. Sling Loading Equipment

The aviation liaison officer advises the supported unit commander and his logistics personnel on the size and weight limitations for various loading methods, including slings, nets, and pallets. The specific equipment required is obtained by the ground unit through supply channels. In order to minimize helicopter waiting time, the ground unit should obtain slings and webbing in advance and have the loads prepared with the aircraft arrive. Loading, whether internal or external, is performed by the ground unit. Where feasible, aircrew personnel may supervise loading.

Section II. AIRMOBILE OPERATIONS

6-7. General

An airmobile operation is one in which combat forces and their equipment move about the battlefield in air vehicles under the control of a ground force commander to engage in ground combat. Airmobile operations are characterized by surprise, flexibility, maneuver over large areas, precise timing, and speed of execution. Airmobile operations can be conducted by any assault force capable of being moved by helicopters. An airmobile operation can be conducted independently or as part of a conventional ground operation.

6-8. Types of Airmobile Operations

Airmobility lends itself to employment—both day and night—in all types of operations. All airmobile operations are planned in the reverse order of execution to facilitate timely coordination of each phase of the operation. Night operations and operations in adverse weather require more detailed planning and briefing than day operations. In all airmobile operations, planning should provide for mutual tactical integrity for both the lift and lifted units. To achieve this, an aviation battalion normally should lift the assault elements of an infantry battalion, a company should lift a company, and a platoon should lift a platoon. An airmobile task force (AMTF) is composed of ground and aviation elements, with attached combat support and service support units, and is in direct support or under operational control of a ground unit commander to execute an offensive, defensive, retrograde, or special operation. The AMTF commander normally directs the operation from the command and control helicopter. This helicopter should not be included in the tactical flight formation, but should be free to move wherever the commander can best supervise and control the operation.

a. Offensive. In offensive operations, three tasks must be performed: Locating and holding the enemy in position; maneuvering against him to gain a tactical advantage; and, at the decisive time and place, delivering an overwhelming attack to destroy him. In order to accomplish these tasks, five offensive operations may evolve: Movement to contact, reconnaissance in force, coordinated attack, exploitation, and pursuit.

(1) *Movement to contact.* Movement to contact is a tactical operation to gain initial contact with the enemy or to regain lost contact. It may take the form of a tactical nap-of-the-earth flight when contact is probable, or the movement to contact may begin as an administrative movement by air from a location well to the rear. The AMTF departs the administrative loading site in a tactical air movement formation. Troops are grouped tactically to facilitate prompt deployment, and security measures are observed by troops not participating in the airmobile operation. Finally, as direct contact with the enemy becomes imminent, the AMTF assaults into selected LZ to secure assigned objectives.

(2) *Reconnaissance in force.* A reconnaissance in force is a limited objective operation by a considerable force to discover and test an enemy's disposition and strength or to develop other intelligence. An AMTF is well suited for this mission because of its mobility. In determining whether to employ units to reconnoiter in force, the commander considers the extent of his present knowledge of the situation, the urgency and importance of the additional information sought, the efficiency and speed of other collection agencies, the extent to which his overall plan of action may be divulged by employment of the airmobile force, and the risk that the airmobile reconnaissance force may lead to a general engagement under unfavorable conditions.

(3) *Coordinated attack.* A coordinated attack is a carefully planned and executed offensive action in which the various elements of a command employ coordinated fire power and maneuver to close with and destroy or capture enemy forces. The employment of airmobile forces in a coordinated attack must be planned in detail and undertaken after thorough aerial reconnaissance, an evaluation of relative combat power, target acqui-

sition and development, and an analysis of all other factors affecting the situation. It requires the use of a combined arms force consisting of a maneuver element (usually air cavalry and infantry), a fire support element (close air support, field artillery, organic mortars and, possible, naval gunfire support) as the base of fire, and all other combat support (engineers, etc.) with mobility equal to that of the maneuver force.

(4) *Exploitation.* The exploitation usually follows a successful penetration or envelopment. Its purpose is to destroy the enemy's ability to reconstitute and conduct an organized defense. While individual local exploitations may appear insignificant, their cumulative effects may be decisive. The exploitation usually is initiated when the enemy force is having recognizable difficulty in maintaining its position. Since the exploitation is characterized by rapid movement, the airmobile force is ideal for participating in this type operation. Airmobile forces may be profitably used in conjunction with armored forces during the exploitation to seize key terrain or block enemy withdrawal routes.

(5) *Pursuit.* The pursuit is an offensive action against a retreating enemy force. It may consist entirely of direct pressure forces that normally are not airmobile, or it may require the employment of a direct pressure force in combination with an encircling force in which it is desirable to employ a highly ground mobile or airmobile encircling force. Airmobility in this offensive operation is a highly desirable asset to the commander.

b. Defensive. Army aviation can significantly assist the ground commander in defensive operations. The two basic forms of defense are the area defense and the mobile defense. Often, the most suitable defense in a given situation will be a variation of either the area or mobile defense, incorporating elements of both.

(1) *Area defense.* The area defense emphasizes the retention or control or specific terrain for a specified period. In an area defense, the defender normally deploys the bulk of his combat power in the forward defense area to stop enemy forces forward of the FEBA. Since a greater reliance is placed on the ability of fires and forces deployed on position in the forward defense area to repulse the attack, forward defense forces have the highest priority for combat power. An AMTF has application in area defense in which airmobile reserves and attack helicopters are employed in counterattack, support security forces or perform the security mission forward of the FEBA, or conduct limited objective offensive operations in support of this form of defense.

(2) *Mobile defense.* The mobile defense emphasizes destruction of enemy forces rather than retention of terrain. This form of defense is normally conducted by deploying minimum forces in the forward defense area with reliance on a large mobile reserve, maneuver, organization of fires, and utilization of terrain to seize the initiative from the enemy. The defender plans to accept decisive engagement and accomplish his mission primarily by executing offensive action against the attacking enemy force. A battalion- or brigade-size element in forward defense echelon, with an airmobile capability, is suited to conduct an economy of force role within the scheme of this type defense. Similarly, an airmobile reaction capability by a portion of the reserve would offer the commander added flexibility for the employment of that part of the reserve. Attack helicopter units possessing an antitank/antimechanized capability have application to the mobile defense.

c. Retrograde. A retrograde action may be conducted by ground or airmobile forces, or by a combination of both. A force possessing an airmobile capability is well suited to operate as a covering force in retrograde operations. This force covers the flanks of a withdrawing force, and conducts limited counterattacks and spoiling attacks against the advancing enemy. The airmobile capability is also used to advantage when relief in place, passage of lines, or stay-behind forces are employed. Retrograde operations are of three basic types:

(1) *Withdrawal.* The withdrawal is commonly referred to as an extraction when aviation resources are used. It may be executed during daylight or during periods of reduced visibility. Regardless of the type of withdrawal being conducted, aerial contacts with and surveillance of the enemy is maintained to provide security and deception, and to prevent a rapid enemy advance. The withdrawal by air may be conducted to terminate an operation, to recover patrols, or to reposition forces. Normally, the largest unit to execute a withdrawal by air will be a battalion. In contrast to a ground withdrawal, aerial recovery is not normally initiated while under enemy pressure.

(2) *Delaying action.* A force with an airmobile capability is particularly suited to conduct delaying actions or to participate in the delay as part of a larger force. When employed with other forces, the airmobile force should be used to exploit its mobility for security and covering force

missions. Limited objective airmobile assaults may be conducted to include raids on enemy rear areas or counterattacks to relieve units under attack.

(3) *Retirement.* A force with aviation support can rapidly execute a retirement as part of a larger force or as an independent mission. The considerations in conducting retirements using airmobile resources are the same as for airmobility behind friendly lines.

d. Special Operations. Special operations include—

(1) *Raids.* An airmobile raid is conducted for the same purpose as a ground raid: To accomplish a specific mission with no intent of holding the objective area. It can be conducted to harass, deceive, or disrupt the enemy, causing him to react in a manner advantageous to friendly forces. A raid may also be conducted to obtain information on enemy installations, units, or activities, and to capture personnel or materiel. Through raids, airmobile forces are capable of achieving extensive harassment and destruction in the enemy rear. A raid is characterized by rapid movement to gain surprise, and rapid withdrawal to avoid decisive engagement. The raid force may be assigned an area of operations, instead of a specific objective, that is located well to the rear in enemy territory or relatively close to the FEBA. The rail force may operate in conjunction with other friendly forces.

(2) *Infiltration.* Airmobile forces may be used in tactical infiltration either as the main or supporting attack force. Planning for airmobile infiltration is similar to that for airmobile operation. Emphasis is placed on air movement of small combat units over multiple flight routes, and on maximum employment of deception.

(3) *Feints.* The feint, when properly executed, is a valuable technique of the AMTF. The basic consideration in planning a feint is to determine what enemy reaction is desired and how to cause this reaction. In placing patrols in enemy areas, several false landings may be made to confuse the enemy. A feint extraction to cause the enemy to believe friendly forces have withdrawn may set the stage for a successful ambush in a specific area. Since it can be assumed that the enemy constantly strives to intercept friendly communications, the strategy of feints must be augmented by electronic deception. However, the success of the overall tactical mission must not be dependent upon nor compromised by use of this tactic.

e. Night Operations. Offensive airmobile operations during darkness and under conditions of reduced visibility may achieve success where a daylight operation would be impractical. However, it must be recognized that darkness increases problems of control, movement, and navigation for ground units as well as aviation units. Through detailed planning, night operations may be executed to give the airmobile force a tactical and psychological advantage over the enemy.

(1) *Classification of night attacks.* Night attacks may be classified as illuminated or nonilluminated. When practicable, a night airmobile force conducts the illuminated attack; however, the particular method employed depends on such tactical considerations as the enemy strength and degree of preparation, his security measures, and terrain and light conditions. The nonilluminated attack maintains secrecy and achieves surprise. The illuminated atttack is employed when the enemy position is strong, when the possibility of achieving surprise is remote, when control requires use of daylight control methods, and when terrain and light conditions so dictate. When illuminating means are used or contemplated for use throughout the attack, the techniques involved are the same as for a daylight attack. Surprise may be obtained by withholding illumination until the landing phase of the operation. When so used, direct illumination may serve to blind the enemy. Care must be taken not to interfere with participating friendly forces. Air Force and Army flare aircraft are positioned so as to be on station for immediate employment. Searchlight-equipped helicopters may be used.

(2) *Planning.* The planning techniques for night airmobile operation are similar to those for daylight operation; however, night operations require increased consideration of the following factors:

(*a*) Night operations require day and night reconnaissance. Day reconnaissance is necessary to provide the AMTF and aviation commanders with knowledge of the terrain. Night reconnaissance should be conducted under light conditions similar to those anticipated for the actual operation. Control points tentatively selected during daylight must be verified to determine if they are visible at night. Night appearances of the LZ should be observed and their characteristics noted.

(*b*) Pathfinders provide essential services at the pickup zone, en route to the LZ, and in terminal guidance at the LZ. These services include establishment and operation of obstruction lights, glide slope lights, landing lights, aids to navigation, radio voice control, and light guns.

(*c*) Pickup zones and LZ, where possible, should be larger than for daylight operations.

(*d*) Positive, detailed aircraft control must be assured throughout the operation.

(*e*) Timing patterns in execution are avoided so that the enemy cannot predict the impending attack. An attack may be made late at night so that initial objectives can be seized and organized by daylight. If the objective is relatively deep, or if the AMTF commander's mission requires immediate continuation of the attack, the attack may begin early at night. If the objective is to be seized and held, the attack may begin early at night so that the consolidation of the objective phase can take place during darkness. Noise and light must be carefully controlled. Deceptive measures may include feints, illumination demonstrations, or artillery fires to cover the noise of aircraft.

(*f*) Successful night airmobile operations may be impromptu; however, the risk of failure is greater than during daylight. Detailed planning is required. Whenever practicable, a rehearsal is conducted during darkness utilizing similar terrain.

(3) *Night fire support planning.*

(*a*) Accurate air to ground fire at night without illumination is very difficult. Target illumination may be provided by aircraft equipped with searchlights, or from illuminating flares delivered from aircraft, mortars, or artillery.

(*b*) Whenever possible, artillery should be used at night to compensate for the reduced effectiveness of aerial firepower.

(*c*) Fire support elements must rely on prearranged communications and visual signals known to be effective at night.

(*d*) Targets for attack can be acquired by an aircraft equipped with a night vision device.

(4) *Night control measures.* The following control measures are appropriate for night airmobile operations.

(*a*) The LZ will be indicated by pathfinders or unit terminal guidance personnel introduced into the LZ prior to or with the initial assault echelon. The normal method is to use marking lights, navigation aids, or flares dropped from aircraft.

(*b*) Special control measures include means for identifying friendly troops, signals used for recognition or other purposes, and special means of navigation for the airmobile column (radar vectoring, smoke rounds).

f. Operations Against Infiltration and Guerrilla Action.

(1) Airmobile forces are particularly suited to offensive operations against insurgent forces. Airmobile patrols follow up sightings by investigating suspicious localities to destroy or capture the insurgents discovered or further develop the situation. These airmobile patrols can cover extensive areas. Centrally located reserves may be called in to reinforce the airmobile patrols.

(2) Airmobile forces exploit their mobility by attacking insurgent base areas located in difficult terrain. During encircling operations, airmobile forces may be used to block otherwise unsecured routes of withdrawal and to pursue fleeing insurgents. Extensive night operations should be conducted to disrupt insurgent activities and to dispel the belief that the insurgent dominates the night. Techniques of surveillance and operations should vary to preclude developing patterns which could lead to ambush.

(3) In stability operations, PSYOP and civil affairs operations, especially those involving such programs as medical civil action, should be employed in conjunction with tactical operations. Additionally, airmobile operations plans must provide for evacuation of sick and wounded civilians and refugees, and resupply of food, clothing, and medicine to assist residents who remain in the area of operations. Care must be taken in the use of attack helicopter firepower to preclude endangering the lives and property of noncombatants.

(4) Considerations in operations involving infiltration and guerrilla action include the following:

(*a*) Intelligence must be timely and accurate.

(*b*) Landing zones should be on or close to objectives; security limitations may prevent extensive LZ reconnaissance. To prevent compromise, LZ may be mutually selected by ground and flight commanders upon arrival in the objective area.

(*c*) The use of multiple lifts and repeated use of the same approach and departure routes should be avoided.

(*d*) Attack helicopters provide escort and deliver fires on the flanks and rear of the objective during the critical landing period.

(*e*) A reaction force may be airborne or on station to provide an immediate reserve capability.

(5) Frequently, counterguerrilla offensive operations require the use of airmobile forces in conjunction with civil affairs operations. Airmobile forces plan for evacuation of civilians and their food supplies. Additionally, they may provide ra-

tions, medicine, water, and other required items to assist the population remaining in the area of operations.

g. Operations Under Nuclear Warfare Conditions. Airmobile forces possess an excellent capability to concentrate rapidly after being dispersed. Airmobile patrols conduct post strike analysis of nuclear targets to assess damage and conduct radiological survey. Airmobile forces rapidly bypass obstacles created by nuclear strikes, exploit the strike, and secure objectives. In the event of enemy nuclear attack, airmobile forces move into target areas, after appropriate radiological surveys, to prevent enemy exploitation. When possible, these forces promptly assist in moving survivors from the target area to medical installations. Airmobile operations involving nuclear weapons must take into consideration the effect of light on aviators' eyes, the distance from ground zero for safety from primary effects, and the length of time residual radiation will be at dangerous levels. The danger of fallout from a surface burst is considered with selecting approach routes and LZ. When an LZ is contaminated, dust accruing from rotor downwash may be hazardous. Alternate plans are prepared in the event residual radiation dose rates are unacceptably high along primary routes and in LZ. Establishing air corridors may offer paths of little or no radiation. Pathfinders are trained and equipped to conduct radiological surveys from the air, and should be employed to seek alternate routes and LZ with acceptable radiation risk. Aerial surveillance units also are trained and equipped to conduct these operations.

6–9. Mission Assignment

Missions are assigned to aviation units by the appropriate headquarters. The aviation commander assigns tasks to his subordinate aviation elements. When necessary to reduce the span of control, the aviation commander may appoint one or more subordinates to serve as alternate commanders.

6–10. Reconnaissance

Most missions are developed on the basis of information obtained from one or more sources. Verification of this information is normally attempted by an aerial reconnaissance. In this manner, the AMTF commander insures that he and his subordinates are properly oriented and that proper planning is accomplished. A combined reconnaissance by commanders and staff officers reduces traffic in the operational area and thus reduces the possibility of compromise. Additionally, repetitive flights in the immediate vicinity of the operational area, especially in the case of proposed LZ, should be strictly minimized to avoid compromising the operation.

6–11. Planning Sequence

Detailed planning for the mission normally begins after the commander and his staff have analyzed the factors of METT (mission, enemy, terrain and weather, and troops available), performed the necessary personal reconnaissance, and arranged for appropriate reconnaissance and surveillance. The planning sequence must be in reverse chronological order; i.e., the plan is formulated from mission accomplishment back through organization for combat and formations required by the ground element to seize the objective. At this time, the aviation commander works closely with the AMTF commander in selecting suitable LZ which will allow the ground force to be landed as close as possible to objectives and in the desired formation. The fire support plan must be considered jointly with the plan of maneuver to insure adequate coordination of matters including the location of weapons, targets, trajectories, and air corridors (routes); flak suppression; defensive targets; and signals for the lifting or shifting of fires. Multiple release points should then be selected to provide flexibility during the assault and follow-up lifts. This will allow the air mission commander to change from one release point to another as subsequent lifts arrive to avoid repeated flight routes or to capitalize on changes in the situation. Flight routes from the pick up zone (PZ) to the release points are selected by the air mission commander based on the guidance and desires of the AMTF commander. Organization of the PZ should be planned by the AMTF commander assisted by the air mission commander. Commanders consider takeoff formations, loading sequence, preparation of loads, traffic control in and about the PZ, and security. Throughout the planning sequence, times must be computed backward from the PZ loading time to insure that all participating elements arrive at the PZ on schedule.

6–12. Communications

Radio is the primary means of communication used by aviation units in airmobile assaults. Airmobile operations require extensive communications planning to provide pathfinder, air traffic control, and linkup communications.

6–13. Liaison

a. Continuous liaison between the aviation unit

and the ground unit is the key to well planned and executed airmobile operations. The aviation liaison element must maintain a constant awareness of the tactical situation, to include the current capabilities and limitations of the ground unit. This liaison element must keep its unit informed as the plan develops, and assist the ground commander and staff in the use of aviation resources during the conduct of operations. The aviation liaison element must be responsive to requirements from its own unit as well as the ground unit.

b. To meet liaison requirements, each aviation unit normally provides a liaison team at the supported headquarters. The establishment of a liaison team with a supported unit does not preclude the requirement for aviation commanders to accomplish personal coordination with the ground commander and his staff. When an aviation battalion or company is attached to, in direct support of, or under operational control of a supported unit for an extended period of time, it should collocate a forward command post (CP) with the supported unit to enhance mission planning and expedite response to known requirements. This CP element must know the disposition of aviation resources at all times and must be able to assemble them rapidly in response to emergencies or changes in plans.

c. The aviation S2 and S3 maintain close liaison with the EW/cryptologic officer of the supported unit's staff. This officer is the focal point for the assembly and dissemination of information pertaining to the enemy's capability to conduct electronic warfare, particularly jamming and imitative communications deception.

6–14. Security

a. Physical security of aviation units in support of an airmobile operation is the responsibility of the AMTF commander. Occasionally, it will be necessary to base aircraft in a secure area when it is not feasible to provide security in a forward area.

b. One means of accomplishing physical security for an aviation unit is through mobility. Frequent displacement if the PZ or base area denies the enemy the reaction time he normally requires to plan and launch an attack. An aviation unit should plan to operate from a specific forward area for only the minimum time required to accomplish its mission.

c. Communications security is a command responsibility. Aviation commanders, crewmembers, and other personnel are responsible for taking necessary actions to insure communications security in accordance with the AMTF commander's policies.

6–15. Fire Support

The fire support means available to the AMTF may include field artillery, air defense artillery (normally when used against surface targets), naval gunfire, organic mortars, attack helicopters, and aircraft of other US services. During a specific operation, the AMTF may be supported by any or all of these means.

a. The planned use of fire support must include all means of support available. Fires along the flight route may be used to facilitate the safe movement of the lift formations past areas of known or suspected enemy positions. These planned fires should be timely, intense and of short duration due to the speed with which the lift formation passes a specific location. Preparatory fires on and around an LZ should also be intense and of short duration. Attack helicopter preparatory fires should commence immediately after the last round of supporting fire, or ordnance delivered by TAC air, thereby filling the void until the first flight of helicopter troop carriers touches down in the LZ. Longer preparations tend to compromise the intent of the airmobile force, and to allow the enemy time to react or withdraw before the airmobile assault can be executed. Positive control measures must be established to provide for lifting all fires or shifting them to appropriate areas. Fire support must be included in the planning for feints or diversionary assaults.

b. Smoke may be employed along a flight route or near the LZ to mask movements of helicopters. However, care must be taken to insure that the smoke does not obscure the vision of pilots or cause undesirable fires in the area.

c. Electronic warfare can be employed to jam enemy communications, navigational aids, weapon control systems, and search radars.

d. Attack helicopters may be used to provide close air support in the form of direct aerial fires to ground forces, subject to the following requirements:

(1) Friendly positions are positively identified by the aircrews.

(2) Positive radio communications are maintained between the helicopters and the supported ground units.

(3) Point target gunnery techniques requiring the accurate placement of fire are used.

e. An airmobile force is most vulnerable to air attack after moving into the objective area. Active air defense will initially depend upon Redeye-type weapons, crew-served automatic weapons, USAF tactical air support, and individual weapons used for air defense. Passive measures, to include cover, concealment, camouflage, dispersion, and movement, will lessen the effects of enemy air attack.

6–16. Logistical Support

The AMTF commander must be aware of the large quantities of POL and ammunition required to support helicopters participating in airmobile operations. Plans should include the prestocking of these items in required quantities and locations.

6–17. Aircraft Maintenance

Aircraft maintenance is the sum of scheduled and unscheduled maintenance. Scheduled maintenance is directly proportional to the hours flown. Unscheduled maintenance is repair required when unpredictable factors such as component failures, combat damage, and special inspections are encountered. Flight scheduling of aircraft in conjunction with maintenance requirements will provide maximum aircraft availability. If all flyable aircraft are flown every day, scheduled maintenance cannot be accomplished. Scheduled maintenance, together with nonscheduled maintenace, rapidly reduces the mission ready rate. An acceptable mission ready rate of aircraft is dependent upon proper maintenance scheduling and supervisory practices.

6–18. Selection of Pickup Zones and Landing Zones

The tactical ground commander selects the LZ and PZ with advice from the aviation commander. A number of considerations apply to this selection.

a. The initial considerations are the mission and landing sites which best support the tactical plan. Location and size will be the major factors in selection of these sites. The desired location normally is one which positions the assault troops in an area that provides reasonable cover from enemy direct fire, affords concealment from enemy observation, and is within easy assault distance of the objective. The location should afford ease of identification from the air under expected visibility conditions. The desired size is one which will accommodate a simultaneous landing of all initial and following assault elements in a predetermined formation. Whenever possible, formations should take off and land simultaneously. This technique has the advantages of ease of control, saving of time, and use of minimum airspace; it also allows the airmobile force to get the maximum combat power into the LZ at one time. Under certain conditions—e.g., industry areas, small congested areas, or high density altitudes—mass landings or takeoffs may not be possible. In such cases, plans should be made for sequential takeoffs and landings by sections, platoons, or companies of aircraft as required. Terrain at the site should be relatively level and free of obstructions such as holes, tall grass, swampy areas, brush, stumps, antihelicopter devices, and barbed wire. Such desirable terrain features will seldom be available in an area of operations, but they should be sought out to the maximum practicable extent.

b. Map reconnaissance seldom provides sufficient information to allow a commander to select a landing site. Visual reconnaissance is required from a practical standpoint and, when possible, should be accomplished jointly by the ground commander, the aviation commander, and/or the aviation liaison officer. If a visual reconnaissance is not possible, forward panoramic horizon-to-horizon photography acquired by aerial surveillance elements is a useful map supplement.

c. It may be necessary to reduce helicopter loads if the selected site presents problems of density altitude, steepness of slope, high trees surrounding the slope, or high grass which prevents helicopter touchdown.

6–19. Flight Routes

Flight routes are selected to avoid enemy strength, to provide ease of navigation and deception, to avoid hazards to flight, and to take advantage of terrain. The AMTF commander normally delegates the selection of flight routes to the aviation commander or liaison officer. Flight routes may be specified paths over the terrain, or may be described by use of a simple checkpoint system to allow flexibility for in-flight changes. One of the most important considerations in planning flight routes is to insure that aircraft do not conflict with fires being delivered in support of the operation. Normally, routes can be planned so as to allow continuous fire support if the tactical situation dictates.

When flight routes are selected over specific paths, navigation by flight formation leaders may be enhanced when they are provided with a sequential series of low altitude, forward-looking panoramic, horizon-to-horizon aerial photographs of the flight route.

6-20. Atmospheric Conditions

Since the ground commander makes the final determination on whether to accept the risks involved in conducting operations, he should understand the effects of atmospheric conditions on aircraft operations. Some of these conditions and their effects are discussed below.

a. Density Altitude. Density altitude is the one atmospheric factor which will most frequently affect operations. Density altitude is the term used to equate a given air density to an altitude above sea level. It reflects the ability of the air, at a particular time and place, to support the weight of an aircraft with a given amount of power. Density altitude is a function of temperature, barometric pressure, humidity, and elevation above sea level. Temperature and elevation have the most effect on density altitude. An increase in either or both of these factors results in a higher density altitude condition. As the density altitude increases, the lifting capability of the aircraft decreases. As the temperature increases, each aircraft has a lesser lift capability. During an early morning lift, 18 helicopters may successfully lift 144 troops in one lift; in the same area, when temperatures are higher later in the day, those same 18 helicopters may be capable of lifting only 126 troops in one lift.

b. Wind. Wind direction and speed are factors which must be considered. An aircraft taking off or landing into the wind requires less forward motion over the ground than one similarly operating in a no-wind condition. A downwind condition has exactly the opposite effect of a headwind as regards takeoffs and landings. As wind increases, proportionately larger areas are needed for downwind operations. Takeoffs and landings should be planned into the wind. If that is not feasible, then loads should be reduced accordingly, or larger PZ and LZ should be used. Wind will also affect the time en route for the aircraft; headwinds will increase time en route and tailwinds will reduce time en route. When timing is critical, adjustments in takeoff time and in specified airspeeds can be made to compensate for wind.

c. Visibility. Helicopters may be operated under reduced visibility conditions. However, reduced visibility makes navigation and formation flying more difficult, and increases the possibility of mid-air collisions. When visibility decreases below safe limits, the air mission commander should recommend cancellation of the airmobile operation to the AMTF commander, based on consideration of factors such as terrain, density of air traffic in the area, state of training of his aviators, and the urgency of the mission. The final decision on whether to accept the risk rests with the AMTF commander.

d. Turbulence. The degree of turbulence encountered during operations, particularly in mountain operations, may affect the size of the loads carried, en route speeds, and flight path to the LZ.

6-21. Loading for Airmobile Operations

Because of the limited lift capabilities existing, the ground commander should limit the initial lift of his unit to only the personnel and materiel necessary to accomplish the immediate assault. Personnel not required in the initial assault and items such as extra ammunition and rations should be excluded. These can be brought into the area in follow-up lifts. Careful planning and sound judgment will allow the ground commander to place the maximum amount of combat power in the LZ during the initial assault.

CHAPTER 7

FIREPOWER

Section I. GENERAL

7-1. Introduction

This chapter discusses the employment of helicopter direct aerial fires in accomplishing the ground commander's mission.

7-2. Coordination of Helicopter Direct Aerial Fires

a. The ground commander controls all organic or supporting fires delivered in support of his unit or falling into his area of responsibility. These fires include those from helicopters organic to artillery or armor units, and escort helicopters organic to Army aviation units. Control and coordination of these fires are the responsibility of the ground commander and may be accomplished by the commander personally, by elements of his staff, by his artillery or aviation representatives, or by combination of representatives under his or his staff's supervision. Additionally, he may direct a subordinate commander who is in a better position to coordinate these fires or he may use any other method which he deems appropriate to the situation.

b. Air cavalry or aerial escort helicopters elements operating independently over unassigned, contested, or enemy territory will control and coordinate their own respective aerial fires.

7-3. Offensive Firepower

Most of the offensive firepower provided by aviation elements is delivered from attack helicopters, with scout helicopters possessing a lesser capability.

a. Attack Helicopter. The attack helicopter is designed to engage targets or to augment the fires of friendly ground-based weapons. It performs its functions within one of the following classifications:

(1) The organic fire support role of air cavalry.

(2) The escort/security force role, employed in a manner similar to that of a ground-mobile security force.

(3) As a striking force. The attack helicopter may also be employed as a part of the striking force in the mobile defense to augment the firepower and mobility of the reserve.

b. Scout Helicopter. The scout helicopter is designed primarily to conduct reconnaissance, to include reconnaissance by fire.

7-4. Capabilities and Limitations

a. Helicopter firepower can be used in offensive, defensive, security, or other operations in support of the ground maneuver plan. It provides the combat commander with—

(1) Responsive aerial firepower against personnel and materiel on area or point-type targets.

(2) Extension of the reconnaissance and security capabilities of ground units.

(3) An additional means of target acquisition, target marking, and target fixing.

(4) Escort of other helicopters, to include troop-carrying helicopters.

(5) Escort or cover for ground convoys.

(6) Neutralization fires for protection of ground convoys endangered by hostile ground fires.

(7) Fires for the neutralization of enemy fire in and around landing zones during airmobile operations.

(8) Responsive counterbattery fires.

b. Although the attack helicopter element provides an excellent quick reaction fire support system, it has certain limitations related to size of weapons, staying time on target due to restrictions to flight imposed by adverse weather conditions. Even with its limitations, the attack helicopter unit can provide to the ground commander an important segment of the fire support means available to him.

7-5. Armament

The firepower of the attack helicopter is determined by the armament subsystem with which it is equipped. With helicopters which possess a capability for interchangeability of armament subsystems, it is possible to arm specific helicop-

ters with those weapons most appropriate to the immediate ground operation. For instance, one or more of the helicopters being used in an operation can be armed with guided missile subsystems to counter an enemy threat that includes an armored or mechanized capability. The aviation unit commander serves as an advisor to the combat commander in selecting armament subsystems for use in a specific operation. Armament subsystems that may be installed in Army helicopters include the following:

a. Area rocket weapons subsystem (2.75-inch) which can utilize a variety of warheads including high explosive, white phosphorous, and flechette. This subsystem is generally employed as an area weapon against troops, lightly armored vehicles, and other soft targets.

b. Grenade launcher armament subsystem (40 mm) designed as a direct fire area weapon for use against troops, lightly armored vehicles, and other soft targets.

c. Antitank guided missile subsystem and HEAT rockets which are capable of providing point fire support against small dimensional hard targets such as tanks, armored vehicles, pillboxes, and bridges.

d. High rate-of-fire gun (7.62 mm) designed to provide area neutralization fires in support of all conventional attack helicopter missions.

e. Twenty/thirty-mm armament subsystem capable of providing point or area fire support against troops, lightly armored vehicles, and other soft targets.

7-6. Explosive Ordnance Disposal

Where armament examination and possible explosive ordnance disposal (EOD) are required, as in the case of a helicopter having returned from a flight with a misfired rocket aboard, the aviation unit may require assistance from the EOD element of the supported combat unit, or from a higher headquarters possessing an EOD capability. Appendix B provides the minimum information requirements for reporting an EOD incident.

7-7. Attack Helicopter Employment

a. General. Attack helicopters are integrated with the plan of maneuver of land combat forces and deliver responsive, on-call, direct aerial fires in support of ground maneuver elements. The attack helicopter mission commander must understand the tactics and employment of the ground unit and be familiar with the plan of action so he can recommend to the force commander the best utilization of attack helicopter elements to support accomplishment of the force commander's mission.

b. Surprise. Surprise is achieved by using the speed, maneuverability, and firepower of the helicopter to aggressively attack the enemy at an unexpected time and from an unexpected direction. Well executed aerial maneuvers at low level, using concealment, speed, and deception, are key factors in providing the element of surprise.

c. Fire and Maneuver. Attack helicopters, using a continuous harassing and exploiting technique, can have a damaging psychological effect on the enemy. Such engagements employ two common features of warfare—a base of fire and a maneuvering force. The base of fire is the element that restricts the enemy's ability to maneuver during the engagement. The maneuvering force is the element that attacks and destroys the enemy by fire. Target characteristics and standoff distance necessary to avoid effective counterfire determine the type armament needed by each of these helicopter elements for a given engagement. Their roles may be interchanged when the maneuvering force completes its task and becomes the new base of fire, while the old fire element becomes the new maneuvering force.

d. Mobility. The rapidity of attack helicopter movement over obstacles, the maneuver of helicopter firepower into position to engage the enemy, the rapid concentration and prompt dispersal of fire elements, and the ease of convergence on a single objective from several directions permit the employment of concentrated firepower on the objective as the maneuver element closes with the enemy. The inherent capability of the helicopter to overfly terrain obstacles permits the assignment of multiple tasks to helicopter units and also permits their rapid disengagement once committed.

e. Flexibility. Mobile warfare dictates that combatants be capable of adapting their actions to rapidly changing situations on the battlefield. Attack helicopter units, because of their excellent means of communications, high degree of mobility, and variety of weapons, are ideally suited for operations in a mobile warfare environment. They are adaptable to rapid changes in attack formations and other engagement techniques during a single encounter with the enemy. The attack helicopter element commander must keep himself and his superiors will informed and

be able to modify his plans to contribute to the success of the overall mission. Mission-type orders best permit flexible response to changing conditions and permit the helicopter commander to modify his plans as the situation dictates.

f. Coordination. The effectiveness of attack helicopters is improved by closely knit teamwork of aviation and ground units that comes from constant association with each other at the lowest level. Helicopter unit commanders maintain contact with their own higher headquarters. Coordination is accomplished with minimum loss of time in performing the mission.

7-8. Factors Affecting Employment

a. General. The factors of METT (mission, enemy, terrain and weather, and troops and equipment) affect employment of attack helicopters. Commanders first consider each factor separately. They then weigh each factor in the light of the importance of the other factors pertaining to the specific mission. In many situations, the relative importance assigned to each basic factor will determine which course of action will be selected. The attack helicopter element commander and the air mission commander consider all factors in relation to the unique equipment and mission capability of their unit.

b. Mission. The mission of any helicopter element falls within the mission of the ground force to which the helicopter element is assigned or attached. However, where an attack helicopter unit is employed as a maneuver unit, its mission may be independent of the ground force.

c. Enemy.

(1) *Available information.* All available information on the enemy location, strength, disposition, composition, and habitual employment is obtained before commitment of attack helicopter units. The collection of information is continued throughout the operation in order to furnish the attack helicopter force commander accurate and timely information for his continuing estimate of enemy capabilities and dispositions. Sources of enemy information include reports from units in contact, air observers and aerial photos, PW and civilians, liaison with adjacent units, ground and air reconnaissance patrols, and intelligence provided by higher headquarters. Reconnaissance in force risks loss of surprise in the ensuing operation and must be coordinated with higher headquarters.

(2) *Capabilities.* Attack helicopter units are subject to attack by enemy tactical air and ground forces. All forms of deception, cover, dispersion, and concealment are important to survival of the helicopter. On the ground, even a small enemy force can infiltrate the helicopter unit position and destroy aircraft. The enemy capability to employ airborne or airmobile forces to counter the employment of helicopter units is of vital concern to the air mission commander. Factors to be considered include—

(*a*) Number and type of weapons possessed by or available to the enemy, and location and disposition of these weapons and their possible fields of fire.

(*b*) Characteristics of enemy weapons; e.g., range, target acquisition means (visual or electronic), rate of fire, mobility, elevation limits, and relative effectiveness against aircraft.

(*c*) Vulnerability of enemy weapons and personnel to air attack.

d. Terrain and Weather. Terrain and weather are important factors in all helicopter operations. The air mission commander must determine his advantage from the terrain; he must also evaluate the advantages the terrain affords the enemy. Conditions of relatively low visibility and ceiling are ideally suited as concealment for helicopter operations; however, these conditions also restrict observation and shorten engagement ranges. Also high temperatures and high density altitudes at high elevations will greatly inhibit the helicopter's load-carrying capability.

Section II. FUNDAMENTALS OF ATTACK

7-9. General

Attack helicopters augment the ground commander's capability to deliver selective, responsive, accurate, and discriminating fires on the ground objective. The primary objective of the helicopter attack is to destroy or neutralize the enemy through the concentrated delivery of aerial firepower.

a. Neutralization Fire. Neutralization fires are used to reduce enemy interference with friendly activities. Infliction of casualties and destruction of materiel are secondary considerations. Prior to conducting the neutralization mission, the attack helicopter commander selects the type of weapons to be used, and determines the method of attack to be employed.

b. Destructive Fires. Destructive fires have the objective of inflicting high casualty rates upon

enemy personnel and materiel. Normally a destructive mission for attack helicopters will be related to a small area or to point targets. Destructive fires may be delivered in conjunction with neutralization fires; i.e., point targets such as fortified bunkers within an area to be neutralized may be designated for destruction. Also, armored vehicles moving across an open area can present a lucrative target for helicopters armed with antiarmor missiles. Moving armor can be located by dust or diesel fumes while tank crews will have difficulty hearing approaching helicopters. By using nap-of-the-earth techniques, helicopter crews will have the elements of surprise and speed and can effectively engage any type armor formation.

7-10. Fundamentals of Attack

To accomplish close air support missions of neutralization or destruction, the following fundamentals should be considered:

a. Surprise. Surprise, based on sound tactical planning, must be attained to achieve maximum results.

b. Speed. Attacks are conducted with maximum speed to achieve surprise and gain initiative.

c. Volume of Fire. A volume of fire sufficient to neutralize the target must be maintained throughout the engagement by the attacking elements.

d. Timing. Precise timing of the attack and the disengagement is necessary to exploit mutual support of all attacking elements and to reduce the effect of enemy countermeasures.

e. Flexibility. The air mission commander must be allowed the widest latitude of initiative in accordance with the principles of war.

f. Avoidance of Enemy Strength. To place the enemy at his greatest disadvantage, enemy areas of strength are avoided while his areas of weakness are exploited.

g. Combat Power. Available combat power is used to the maximum.

7-11. Methods of Attack

Running fire or hovering fire may be used to attack targets.

a. Running Fire. Running fire is delivered on a target while the helicopter is in flight. It can be delivered from any altitude, provided the slant range to the target is compatible with the effective range of the weapon.

b. Hovering Fire. Hovering fire is delivered as the helicopter momentarily rises from a covered or concealed position. Where terrain permits, the helicopter is moved laterally between bursts of fire so that it does not appear to the enemy twice from the same position.

Section III. SUPPORT OF GROUND OPERATIONS

7-12. Combat Operations

Regardless of the mission of the supported commander—whether offensive, defensive, retrograde, or a special operation—the support provided by attack helicopters is not basically changed. The helicopter is used for the same attack mission, using substantially the same methods of attack to support all land combat operations.

7-13. Offensive Missions and Tasks

Offensive operations are characterized by aggressiveness, speed shock action, and surprise. Attack helicopters are capable of providing responsive close air support in the form of direct aerial fires to all types of ground offensive operations, as well as conducting independent attacks. Even where adequate numbers of ground forces are not available or their commitment is not feasible, they are capable of immediate reaction missions and they restrict the enemy's capability to withdraw. Attack helicopter offensive missions and tasks include the following:

a. Tactical Escort. Tactical escort, to include mounted or dismounted troop and supply movements, tactical formations of surface forces, and airmobile columns.

b. Reconnaissance. Aerial reconnaissance, to include reconnaissance in force and reconnaissance by fire, to assist the overall intelligence effort by gathering information or further developing potential intelligence.

c. Fire Support. Aerial delivery of fire support to supplement or augment ground-based direct fires.

d. Economy of Force. Economy of force, to include augmentation of fires of security or supporting attack forces.

e. Security Missions. Attack helicopters conduct aerial security missions and assist in or conduct—

(1) Counterfires.

(2) Actions to deceive the enemy as to the intent of the friendly ground force.

f. Collecting Information. Attack helicopter crews assist in the orientation of friendly ground forces by collecting information on the locations and dispositions of friendly and enemy troops.

g. Engaging Counterattacking Forces. During the consolidation and reorganization of the objective, attack helicopters can engage counterattacking enemy forces.

h. Penetration. Attack helicopters may support a ground force penetration by attacking enemy forces maneuvering to counterattack the penetrating force. Detailed coordination with the ground commander must be maintained to insure that the helicopter element does not misidentify freindly troops as enemy forces. This is most critical during the breakthrough, when the line of contact is not easily distinguished and friendly forces are in close contact with the enemy.

i. Exploitation. Attack helicopters are well suited to the support of an exploitation. The mobility and firepower of the attack helicopters will increase the speed of the ground forces. The attack helicopter can be employed to extend reconnaissance and security for the main force during the exploitation. If the exploitation involves the envelopment of an enemy flank, the attack helicopter force may attack enemy troops attempting to escape the envelopment, and disrupt and disorganize enemy attempts to reinforce threatened units. The attack helicopter force may extend flank reconnaissance and security, thereby permitting the ground force commander to pursue the exploitation with greater speed.

j. Counterattack. Attack helicopters provide the ground commander with an independent maneuver capability as well as planned or on-call direct aerial fires for counterattacking ground force. This support may be deployed against the flanks of the enemy offensive and against forces maneuvering to reinforce the enemy attack.

(1) *Coordination.* The attack helicopter mission commander must assist in the coordination of the tactical ground plan and the helicopter fire support plan. He must insure that his fire teams know the locations of friendly ground forces at all times. He must also select and assign fire team rendezvous locations and known safe areas for emergency landings.

(2) *Targets.* When the locations of friendly ground forces are known in advance, the attack helicopter mission commander assigns targets to fire teams. As targets of opportunity are sighted during the operation, he issues appropriate fragmentary orders to insure engagement of those targets.

k. Pursuit. Attack helicopters may be used in pursuit of enemy forces. Attack helicopter units may assist the ground commander by reporting enemy locations and activities and engaging enemy units as a part of encircling forces. The mobility and firepower of attack helicopters will contribute to the maintenance of relentless pressure on enemy forces and assist in refusing the enemy the opportunity to reconstitute an organized defense.

7-14. Escort of Airmobile Forces

Attack helicopters provide security to other helicopters engaged in airmobile operations when air-to-ground fires are required.

a. Planning Considerations. Detailed planning and coordination are necessary. When urgency of operations precludes normal planning, unit SOP battle drill and training must be relied upon for efficient execution of the mission. The AMTF commander must issue the operations order in time to allow the air mission commander to formulate his plan, issue orders, and conduct aircrew briefings. Warning orders are issued well in advance to allow for adequate planning time. Flight routes are selected which offer ease of navigation, minimum interference from enemy or friendly force activity and with planned friendly fire support, and maximum cover and concealment. Nap-of-the-earth flight is used as necessary. En route formations will be determined by the factors of METT. When the airmobile force is of such size that flank security at extended distance is required, a portion of the helicopter force may be given a flank security mission and the balance of the force will escort the formation. The armament used on helicopters will depend upon the nature of known and suspected enemy targets. Helicopters selected for escort ideally have a greater speed capability than the helicopters being escorted. This allows the escorts to depart the formation en route, engage targets, and rejoin the formation. As the element nears the LZ, lead escort helicopters can depart the formation to conduct LZ reconnaissance, prestrike, and neutralization fire missions. Centralized control of the entire airmobile force (troops, airlift helicopters, escort helicopters) is essential during the operation. This control normally is vested in the AMTF commander.

b. Escort Operations for Airlifted Forces.

(1) Attack helicopters provide security for

airlifted forces during the loading phase. One the airlifted force is airborne and en route to the objective area, attack helicopters are responsible for the destruction or neutralization of enemy forces which threaten the formations. Escort helicopters are deployed in advance, along the flanks and to the rear of the formation. Escort formations remain flexible, and the fire team leader continually adjusts his elements to maintain 360° protection. If the force is threatened or attacked, neutralization fires will be placed upon the enemy until the airlifted force has passed out of range. If the enemy target is not neutralized, the supported unit leader is notified so that appropriate action can be taken.

(2) Mechanical failure or enemy action may force transport helicopters to abort prior to reaching the objective area. If possible, escort helicopters will provide security and fire support for personnel of downed helicopters until they can be rescued. Rescue may be facilitated by employing airlift helicopters returning from the LZ or by medical evacuation helicopters; however, compromise of the protected status of medical helicopters under the Geneva Conventions will be avoided.

(3) As the airmobile force nears the LZ, tactical considerations permitting, designated helicopter fire teams should conduct the LZ reconnaissance. The composition of the reconnaissance force is dependent upon the escort strength available, the size of the LZ, and the time available for conducting the reconnaissance. When approaching the LZ, the helicopter should avoid the open areas which provide the enemy the best fields of fire and will probably be the areas where fires are concentrated. Initiating the reconnaissance from the flanks compels the enemy to fire from a less desirable position. The fire team leader designates specific portions of the LZ for each helicopter to cover based on prior intelligence, aerial photographs, and maps of the area. The air mission commander instructs his fire teams to search for exact locations and dispositions of enemy troops, antiaircraft weapons, and automatic weapons. Reconnaissance by fire will be employed as necessary. In addition to locating enemy positions, the condition of the landing surface will be checked for obstacles such as poles stuck in the ground, cables strung across the area, and indications of mines or demolition charges. Upon completion of the reconnaissance, the fire team leader must report to the AMTF commander the condition and status of the LZ. This report must be given in sufficient time for the air mission commander and/or the AMTF commander to react.

(4) Escort helicopters may be assigned the mission of prestriking the LZ. Well-timed neutralization fires violently executed will significantly reduce the enemy's capability to repel the airmobile assault force. The fire team leader should consider giving priority to the expenditure of sufficient ammunition to make the prestrike effective and yet not sacifice the capability of performing subsequent missions. An ineffective prestrike negates the element of surprise and leaves the enemy alerted to the impending airmobile assault. Prestrike fire support should be maintained until the air landed force has engaged the enemy. There should be no time gap between the prestrike and the assault by the air landed force. Any time interval between these fires gives the enemy time to reposition weapons and troops and to replace gun crews without interference. When the air landed force arrives in the LZ, attack helicopter fires will be augmented by the fires of escort helicopters that remained with the airmobile formation. When firing in the LZ, helicopters should maintain sufficient altitude above the terrain to permit observation and the engagement of targets of opportunity. The first element of the airlift helicopters will augment the fires of the escort helicopters with controlled neutralization fires on the landing zone during the approach and on takeoff after clearing the assaulting troop positions. Rules of engagement for the LZ area must be clearly established prior to the operation to prevent attack helicopters escorting subsequent lifts from firing into friendly troops already in the area.

(5) Attack helicopters may be used to escort aircraft delivering smoke or chemical agents on enemy positions, or laying smokescreens between the enemy and the LZ.

(6) Subsequent to the debarkation of the air landed force, a portion of the helicopter escort may be designated to remain in the LZ area to provide fire support and reconnaissance.

(7) As the empty airlift helicopters depart the LZ, they are escorted to a specified flight altitude or release point by elements of the attack helicopter force. This escort force will cover the departure route with neutralization fire. The helicopter fire team leader must insure that, as the airlift helicopters begin their liftoff, his fire teams are in a position to conduct effective neutralization of the departure corridor. Normally, this will require the fire teams to be

located to the flanks behind and below the airlift aircraft as they climb out.

7-15. Escort of Ground Convoys

The threat of ambush to ground convoys usually is present in rear areas during defensive or retrograde operations in restrictive terain, and in operations against an enemy adept at infiltration. Stability operations frequently will require aerial escort of ground convoys. The ambush threat can be greatly reduced by using an attack helicopter escort for the convoy. The mere presence of an aircraft escort in the vicinity of the convoy can serve as a deterrent to ambush or other actions by an enemy force. In some instances, it is tactically more advisable and economical to place the attack helicopter on strip alert and utilize a fixed wing or rotary wing observation aircraft to provide aerial cover for the convoy. If enemy action ensues, the attack helicopters can be called in.

a. Planning Considerations. The attack helicopter mission commander should conduct a thorough map reconnaissance of all proposed routes, alternate routes, and adjacent terrain. He should establish a system of checkpoints, phase lines, and holding areas to be used by his attack helicopter escort. These control measures must be coordinated with the surface convoy commander. If time and security permit, a route reconnaissance should be made prior to conducting the convoy escort. Coordination for refueling and rearming must be accomplished if the escort of the convoy is expected to require more time than helicopter fuel endurance permits. Coordination with the convoy commander should include—

(1) Number and type of vehicles in the column.

(2) Radio frequencies, call signs, and/or visual signals.

(3) Primary and alternate routes of advance.

(4) Starting time, starting point, rest stops, and release points.

(5) Attack helicopter and surface convoy prearranged actions, if attacked.

b. Conduct of the Mission. The mission may be conducted by a team of aerial scouts employed as an advance reconnaissance element, with attack helicopters composing a strike force. The reconnaissance elements should reconnoiter at an altitude based on the factors of METT, and should search at least 1,500 meters on either side of the route. The reconnaissance effort should be directed toward determining the condition of the route, obstacles along the route, and enemy positions or terrain that dominate the route. The reconnaissance element relays all pertinent information to the attack helicopter mission commander, using the spot report technique. This includes negative reports at frequent intervals. The helicopter strike elements provide protection directly over and adjacent to the column. The strike force normally will fly in 360° orbits or S patterns over the column, reconnoitering terrain features immediately adjacent to the route. This force must be prepared to support both the aerial reconnaissance elements and the surface convoy.

7-16. Reconnaissance Operations

Effective reconnaissance provides much of the information concerning the enemy, terrain, and weather essential to the conduct of operations. When employed with conventional surface reconnaissance elements, attack helicopters extend the overall reconnaissance effort. The supported force commander should consider the type of helicopter support required. For the main reconnaissance effort, he should consider the observation-type helicopter. The force G2 will coordinate the reconnaissance effort and formulate reconnaissance and surveillance requirements within the force area. During reconnaissance operations, attack helicopters will engage in offensive action as required.

7-17. Security Operations

Security includes all measures taken by a command to protect itself from espionage, observation, sabotage, annoyance, or surprise. Its purpose is to preserve secrecy and security of friendly forces in order to gain and maintain freedom of action. Security is achieved by providing for the detection of a threat; sufficient time and maneuver space to react to the threat; and the avoidance, neutralization, or destruction of the threat. Commanders at all levels must take precautions against both air and surface threats.

a. Security Against Surface Threats. Surface threats to security include enemy reconnaissance; attack by ground, airmobile, airborne, or marine forces; infiltrators; irregular forces; of partisans.

b. Security Against Air Threats. Normally, security against air threats is provided by air defense artillery elements and by high performance aircraft of the US Air Force. Security is enhanced by selection of tactics appropriate for a hostile air environment.

7-18. Amphibious Operations

Attack helicopters may be utilized in support of amphibious operations to increase the flexibility required by ship-to-shore operations. In establishing beachheads, a large volume of immediately responsive and accurate fire may be delivered by carrier-based helicopters. Normally, attack helicopters are not used prior to the landing of the ground forces. Once the beachhead has been established, these helicopters can be employed in their conventional roles of operating with ground forces.

7-19. Night Operations

Attack helicopter night operations offer an excellent opportunity to achieve deception and surprise, thus enhancing the success of the mission. Attack helicopters can provide direct aerial fires, antiarmor, reconnaissance and security, illumination, escort, fire adjustment, and other helicopter support. The fundamentals involved in night operations are the same as those in daylight operations, although techniques may vary. For example, more control measures will be placed upon helicopter units during night operations than during daylight operations, weather minimums must be higher, and additional navigation aids may be required. Consideration of the means of marking troop positions during helicopter fire support missions insures prompt and accurate fire support without endangering friendly troops. Mission success is dependent upon prior reconnaissance, simple plans, accurate navigation, the night training proficiency of flight crews, and thorough coordination among all elements involved. An example of the techniques which can be developed specifically for night helicopter operations is the use of a helicopter equipped with a searchlight to illuminate an enemy for destruction by attack helicopters.

7-20. Defensive Operations

Tasks common to defensive operations in which attack helicopters can be utilized include the following:

a. Responsive close air support in the form of direct aerial fires and early warning for security forces and the main defensive force.

b. Support of committed reserve forces.

c. Covering gaps in the defensive position by aerial reconnaissance and target acquisition.

d. Countering enemy airmobile or airborne forces.

e. Rear area security operations.

7-21. Retrograde Operations

a. General. Attack helicopters can be used to support retrograde operations by performing tasks such as the following:

(1) Assisting an engaged force in breaking contact.

(2) Conducting deception misssions.

(3) Supporting withdrawal by air operations by providing close air support for the covering force as well as escort of the airmobile column.

(4) Assisting the flank and rear security forces by providing close air support and reconnaissance.

b. Missions. In conducting a retrograde operation, attack helicopters will be used to inflict maximum damage on the enemy forces through counterattacks, traps, and canalization of attacking forces. Use of the attack helicopter affords the ground commander a highly maneuverable weapon system to fix or hold the enemy in position, neutralize enemy fires, and cover the friendly forces during the retrograde operation. Missions performed by attack helicopters in support of retrograde operations include—

(1) *Reconnaissance by fire.* Reconnaissance by fire is conducted to the front and flank of the supported unit to give early warning, and to delay and harass the enemy's advance elements. The attack helicopter reconnaissance force should be sufficient to provide attack strength, operating flexibility, and area coverage. In conducting reconnaissance by fire, the mission commander must consider the following:

(*a*) Coordination with the ground force commander of the overall tactical plan and the areas, spaces, and routes to be reconnoitered by fire.

(*b*) The disposition of friendly forces will be fluid in a retrograde operation, and the attack helicopter mission commander must insure that he has communications with ground elements at all times.

(*c*) Coordination with the fire support (liaison) officer to determine areas of friendly artillery fire, and to plan on-call fires in the attack helicopter force area of responsibility.

(*d*) While conducting the reconnaissance by fire, elements of the attack helicopter force will fire at suspected targets in their area, zone, or route. If unable to destroy enemy elements, every effort will be made to delay, disorganize, and harass their advance.

(*e*) The location of servicing areas is critical to the successful conduct of retrograde

operations. Transport helicopters should be used to deliver fuel and ammunition to predesignated areas on call. The arrival of the attack helicopters and the transport aircraft at the servicing area should closely coincide. The attack helicopters will refuel, rearm, and depart the site expeditiously. This method of refueling/rearming reduces the security that is required when fuel and ammunition are pre-positioned.

(2) *Fire support of delaying forces.* Special considerations associated with fire support to delaying forces are fuel and ammunition for the attack helicopter force. These supplies should be located in a relatively safe area to the rear of the delaying force.

(3) *Escort of airmobile withdrawal of covering forces.* The availability of attack helicopters provides the commander with a significant advance in techniques of conducting all types of retrograde operations or disengagements with the enemy, either as part of a withdrawal in the conduct of a mobile defense or in achieving separation distance for the employment of nuclear weapons. Ground forces in contact with the enemy are essentially holding the enemy by fire and maneuver. For a successful withdrawal, it is necessary to provide a substitute fire and maneuver means. Attack helicopters are ideally suited to this task. Initially, the force to be withdrawn is provided all available artillery and close air support. Transport helicopters, escorted by attack helicopters, move to the rear of the forces to be withdrawn. Some of the attack helicopters participate in bringing fires on the enemy while others secure the LZ. On prearranged signals, the ground force withdraws to the LZ as the tempo of aerial fire support increases. Consideration should be given to the shifting of artillery and close air support to protect the LZ from envelopment by the enemy force. Upon extraction of the ground force, the attack helicopter force breaks contact, then intensive fire support by other means is employed to minimize enemy interference with the movement of the transport helicopters. It must be remembered that no helicopter has sufficient armor to be ideally suited for extracting forces when they are in contact. If possible, it would be more advantageous to break contact with the enemy and then undertake extraction.

Section IV. AERIAL FIELD ARTILLERY

7–22. General

Aerial field artillery is employed to provide aerial fire support to all maneuver forces throughout all areas of operations and may be assigned any of the standard tactical missions for field artillery. It is especially useful in meeting requirements for field artillery support in jungle, delta, and mountainous terrain, and in any tactical situation which limits effective and economical use of cannon artillery.

7–23. Operational Concepts

a. Aerial field artillery units deliver fires from the aircraft in flight, employing speed, agility, and responsiveness to achieve surprise and destroy targets. Aerial field artillery provides a means of extending the fire support capabilities available to the force commander. Aerial field artillery possesses mobility characteristics which provide for artillery support in many situations in which the mobility characteristics of other types of field artillery are less suited. It is capable of rapidly maneuvering and massing fires in any type of terrain despite the wide dispersion required for survival on the modern battlefield.

b. Delivery of fires in close support of maneuver forces requires precise timing in relation to the movement of the maneuver forces. One of the most important elements is the coordination and control required for fires in support of operations. Aerial field artillery; tactical air strikes; cannon, missile, and rocket artillery; naval gunfire and chemical weapons are fire support means considered for operations. The fire support coordinator, when preparing the fire support plan for support of the operation, must consider all fire support means available in order to provide optimum fire support for the force.

CHAPTER 8

COMBAT SERVICE SUPPORT

Section I. THE SUPPORT COMMANDS

8-1. General

a. Combat service support (CSS) is the support provided operating forces primarily in the fields of administrative services, chaplain services, civil affairs, finance, legal service, maintenance, medical service, supply, transportation, and other logistical services.

b. Combat service support in a theater of operations is provided through the system of support commands discussed below. Army aviation elements receive CSS through these support commands and assist the support commands in providing CSS to other organizations.

8-2. Support Command Levels

Support commands are established at theater army, field army, and division levels to relieve commanders at those levels of the detailed planning and operations necessary for effective CSS. The normal flow of supplies is direct from the theater army support command (TASCOM) to direct or general support units in the combat zone on a throughput basis. Intertheater Air Force airlift may be delivered direct to the field army rear or corps support brigade areas for further shipment to the ultimate consignee. Moving supplies as far forward as possible without stopping at intermediate depots or transportation transfer points is the keynote to effective modern resupply procedures.

8-3. Theater Army Support Command

The function of the TASCOM is to provide CSS to Army and other designated forces in the communications zone (COMMZ), and to participate in the throughput of supplies to forces operating in areas forward of the COMMZ. Support provided by the TASCOM, which is on the same level as a field army under the theater army command structure, includes certain general support to field army, direct and general support in the COMMZ, and rear area protection responsibility and participation in stability operations within the COMMZ. The TASCOM normally contains a personnel command, supply and maintenance command, engineer command, transportation command, and a medical command. These commands provide CSS to the theater army and to such other forces as the TASCOM directs.

8-4. Area Support Command

When the COMMZ covers a very large area, the TASCOM commander may set up two or more area support commands (ASCOM) to provide CSS within their assigned portions of the COMMZ. Where established, the ASCOM is a major subordinate command of the TASCOM and is coequal with the other TASCOM commands listed above. TASCOM provides the ASCOM with policy direction, broad guidance, and general supervision on area support and rear area protection planning for the entire COMMZ. Each ASCOM provides direct support service (less medical and ammunition) to units located in or transiting its area of responsibility within the COMMZ.

8-5. Field Army Support Command

The field army support command (FASCOM) is designed to support a field army composed of a headquarters and its assigned or attached forces. The FASCOM is on the same command level as the corps and is a major subordinate command of the field army. The FASCOM provides CSS to forces in the field army service area and in each subordinate corps area, primarily through two types of major subordinate elements:

a. Army-Wide Services. The FASCOM medical and transportation brigades, and a civil affairs brigade when attached, provide services on an army-wide basis. The military police brigade provides services in these areas for prisoners of war and the confinement of military prisoners.

b. Support Brigades. In a typical field army, FASCOM provides four support brigades to perform designated services for supported forces. Three of these are designated corps support brigades, with one brigade supporting each corps. The fourth is designated the army support bri-

gade and is employed in the field army service area. Each support brigade provides maintenance, supply and services, transportation services, and personnel and administrative support to units located in its area of responsibility. The army support brigade provides this support, less ammunition support, to elements in the field army service area, and backup supply and maintenance to the corps support brigades. The corps support brigades have ammunition groups assigned to provide ammunition support for their respective corps slices of the combat zone and for units in the army service area. Each crops support brigade supports divisional and nondivisional units located in its corps area.

8-6. Corps Support Command

The corps support command (COSCOM) is assigned to a separate corps. The COSCOM exercises command, control, and supervision of all CSS units assigned or attached for support of the separate corps force. The corps support brigade of the FASCOM is the nucleus for the COSCOM. This nucleus is augmented with sufficient additional FASCOM/COMMZ-type CSS elements to enable the corps to conduct separate operations.

8-7. Division Support Command

The division support command (DISCOM) provides division-level CSS to all organic and attached elements of the division, less military police, construction, cryptologistic, and those administrative services provided by staff sections of the administration company. The DISCOM supports each brigade of the division with supply services, medical, and maintenance elements organized to meet the brigade's needs. Although the corps support brigades may provide some backup supply support to division elements, most bulk supplies are throughput from TASCOM/FASCOM to DISCOM without passing through the corps support brigades.

Section II. AIRLIFT OF MATERIEL

8-8. Introduction

The airlift of materiel within the combat zone is accomplished through employment of Army aviation and Air Force tactical elements. (Chapter 6 discusses the tactical airlift of troops by Army aviation elements.) Best utilization is attained by adapting to the situation the most appropriate airlift capabilities of each service to provide an air line of communications.

a. Intertheater airlift is an Air Force function. Also, Air Force aircraft are used for the airlift of materiel from rear areas, as from the COMMZ or field army service area, to points as far forward as practicable. These airlifts use the throughput concept, under which shipments bypass one or more intermediate supply points.

b. Materiel delivered to oversea aerial or water ports of debarkation on a wholesale basis by Air Force airlift, or by surface modes, can be further moved by Army helicopters to using units or to supply points established for using units. The aerial resupply of land combat forces operating in forward areas is accomplished primarily by Army aviation units, but Air Force elements can also participate in this function. For this purpose, it may be necessary to attach Air Force airlift elements to the land force.

8-9. Considerations

Although optimum utilization of airlift would be attained by use of Air Force transport aircraft to move materiel from a COMMZ depot directly to the ultimate user, this is often impracticable. There normally must be a point at which wholesale airlift is terminated, and retail deliveries to the ultimate user undertaken by Army helicopter elements. Factors to be considered in determining the point at which wholesale airlift is terminated include the following:

a. Airfields. Suitable airfields must be available at points into which materiel is to be air landed.

b. Enemy Air Defense. Based upon the degree of risk that is acceptable, the enemy air defense capability can limit the use of forward areas for air landing by transport aircraft.

c. Receiving Unit Capability. Combat units in forward areas have a limited capability to receive, store, protect, and redistribute materiel air landed in wholesale lots.

d. Ultimate User Requirements. The ultimate user may be a unit of company size that requires resupply in retail quantities only.

8-10. Staff Procedures

Requests for aerial delivery of materials and supplies are processed from the maneuver battalion S4 to the brigade aviation section. The brigade aviation officer then consolidates all requests in the brigade and forwards them to the division air

movement control center (AMCC). Requests are normally received in the AMCC early in the evening to allow time for planning and allocation of aircraft for tactical and logistical requirements. Requests are identified by type aircraft load and must include pickup point, dropoff point, frequencies, and call signs at each location, and total number of sorties required. When this information is consolidated at division level, the determination of total aircraft requirements at each brigade for the following day is made. When nondivisional aircraft are used to augment organic aircraft, the unit being augmented will assign the total missions to be accomplished with all of the above information included. When aircrews report to the brigade for actual mission accomplishment, brigade aviation officers and the brigade S4 must maintain a constant vigil over the total sorties flown and the loading of supplies and equipment.

a. The ground unit commander's planning for aerial movement of materiel must include the following:

(1) Development of the air delivery plan to assure that most critical items are lifted first.

(2) Preparation of unit supplies and equipment for air transport, with technical supervision and assistance as required for appropriate field support units.

(3) Provision of the necessary serviceable rigging equipment and trained personnel to prepare, rig, and hook up the loads. (It should be noted the rigging and hook-up of loads should not be undertaken by unqualified personnel.)

(4) Assurance that loads are properly rigged and do not exceed any weight limitations imposed by the lift capability of the transporting helicopter.

(5) Establishment of pickup and delivery points.

(6) Provision of communications and identification of units at pickup and delivery points and assurance that points are adequate to support type loads and aircraft requested.

(7) Provision of pathfinders or air movement teams on control pads.

b. The aviation commander's planning for aerial movement of materiel must include:

(1) Provision of advice and technical assistance to the transported unit as requested.

(2) Assurance that cargo weights do not exceed the lift capability of the helicopter.

(3) Provision of assistance to the ground unit in planning for use of pathfinders and communications in the landing zone.

(4) A check of enemy locations and friendly activities to select the best flight routes.

(5) Programing aircraft for specific missions to allow appropriate aircraft to be assigned to shorter or longer missions.

8–11. Methods of Delivery

Methods by which airlifted materiel can be delivered to using units by Army aircraft include:

a. Air Landed. Materiel moved by air is unloaded after the aircraft has landed. During the airlift, this materiel may be carried internally or externally by airplanes or helicopters.

b. Airdrop. Materiel can be delivered from Army aircraft in flight by use of cargo parachutes or by free drop. Considerations for airdrop include packing of materiel to prevent damage, and dropping into secure areas to prevent enemy capture of materiel.

8–12. Airmobile Operations

In airmobile operations, the operations plan will include the requirement for delivery of equipment and supplies. The supported unit will prepare and load its own equipment and supplies. The aircraft commander is responsible for insuring that the load is safely prepared and is within prescribed weight limitations for the existing conditions.

8–13. Airborne Operations

Delivery of materiel to the airhead will be accomplished by Air Force elements until those elements are withdrawn from the operation. Materiel airlifted within the airhead may be transported by organic Army aviation.

Section III. AVIATION MAINTENANCE AND SUPPLY

8–14. General

The aviation maintenance and supply system is designed to provide adequate, timely maintenance and supply support for Army aircraft. The structure is based upon the assumption that flyable aircraft requiring maintenance beyond the capability of their units will be flown to an appropriate aircraft maintenance support unit. For unflyable aircraft, maintenance support may be furnished by contact teams from the supporting maintenance unit or aircraft may be evacuated to the supporting aircraft maintenance site. Operational readiness float aircraft, to replace aircraft undergoing support maintenance, should be utilized to

assist aviation units in maintaining maximum availability of operational aircraft. Policies pertaining to the use of serviceable parts for unserviceable aircraft are established in AR 750–50. Cannibalization of aircraft is allowed only as prescribed in AR 750–1.

8–15. Utilization

a. Realistic flight control programs will facilitate the ability of available aircraft maintenance elements to provide effective support. Exceeding the established flying hour program will result in increased aircraft maintenance support requirements.

b. When the ground commander uses aviation support at an abnormally high rate, he must understand that a period of reduced aviation capability will follow until the balance between flight operations and aircraft maintenance can be restored. Even though the commander may be willing to accept future reduction in aviation support as a tradeoff to meet immediate requirements, consideration should be given to the ability of the aviation unit to provide future support to other units. These units may be deprived of future support if the aviation unit is unable to operate at expected efficiency levels due to a heavy backlog of maintenance requirements.

8–16. Interrelationship of Supply and Maintenance

Effective repair support for aircraft in the field army is directly dependent upon adequate and responsive aircraft repair parts supply support. Repair parts required for frequent maintenance operations must be immediately available, especially at the direct support level where equipment must be repaired for return to user with the least possible delay. Components, assemblies, and parts repaired by the general support activity for return to stock constitute a major source of supply in support of the maintenance mission. At the same time, repair of items for return to stock is contingent upon the rapid return of unserviceable items to the general support activity. Thus, the interdependence of maintenance and supply is readily apparent; the requirement for positive control, coordination, and management of the two activities is essential.

CHAPTER 9

SPECIALIZED AVIATION SUPPORT

Section I. NUCLEAR, CHEMICAL, AND RADIOLOGICAL OPERATIONS

9–1. General

The aerial mobility provided by Army aviation gives the supported commander the flexibility needed to conduct operations under CBR conditions. Materiel in short supply, to include weapons and protective equipment, can be held in central locations and moved to critical areas rapidly and efficiently through use of Army aircraft.

9–2. Aviation Tasks

Tasks which may be performed by use of Army aircraft in support of these operations include—

a. Transport of chemical weapons and CBR defensive equipment.

b. Radiological survey.

c. Support of combat operations by aerial delivery of smoke and riot control agents.

9–3. Planning and Coordination

a. Aerial radiological surveys are planned by the chemical officer under the general staff supervision of the G2 and in coordination with the aviation representatives.

b. Other missions are planned by the staff chemical officer, in coordination with the ACE and the FSE. The staff chemical officer provides technical advice and assistance in matters pertaining to the handling of materiel and the decontamination of aircraft. He recommends the flight path to achieve the best results over the target area. An element of the ACE plans the flight path to the area of release of the chemical agent/ammunition.

9–4. Radiological Survey

a. Radiological survey is a directed effort to determine the presence, location, extent, and intensity of radiological contamination in a given area. In electing to use aerial rather than ground means, the following capabilities and limitations of aircraft should be considered:

(1) *Capabilities:*

(*a*) Speed and flexibility enable coverage of a large or otherwise inaccessible area in minimum time.

(*b*) Altitude provides means of surveying areas with protection from dose rates that are unacceptable to ground parties.

(*c*) Minimum personnel, equipment, and communications are required.

(2) *Limitations:*

(*a*) Aerial surveys are less accurate than ground surveys because of the difficulty of maintaining constant altitude and ground speed, and because of instrument delay time experienced in aircraft.

(*b*) Aircraft may be subjected to enemy ground fire.

(*c*) Weather conditions may limit low-level flights.

(*d*) Limitations common to night operations.

b. Aerial survey may be conducted by the designated route method, the preselected point method, or the standard Army preselected course leg method. Helicopters are preferred for surveys because of their ability to hover and to operate at the desired ground speeds of less than 53 knots.

9–5. Crew Hazards

The crew is in danger of contamination when transporting materiel such as toxic chemical or riot control agent munitions or dispensers. The degree of hazard depends upon such factors as the type of agent involved, the type of munition or disseminating device, and the possibility of leakage. Protective masks and clothing may be required for some of the tasks and should be considered for each. Either the pilot or copilot will wear a protective mask at all times when fuzed items containing incapacitating or toxic chemicals are carried inside Army aircraft. Other crewmembers will have readily available a protective

mask which has been adjusted and fitted prior to takeoff.

9-6. Decontamination
Where contamination is suspected, aircraft returning from missions should land at preselected decontamination areas for inspection and decontamination as required. Establishment of two or more decontamination areas near an airfield will permit activation of the one area downwind from the airfield at any time needed.

Section II. PSYCHOLOGICAL OPERATIONS

9-7. General
Psychological operations (PSYOP) conducted at division level are the responsibility of the division CA/PSYOP officer. Since PSYOP are conducted through communication with the individuals and groups toward whom the operations are directed, Army aircraft can be used to assist in the performance of many of the tasks necessary for the success of these operations.

9-8. Communications Media
The use of Army aircraft can greatly increase the effectiveness of the communications media listed below:

a. Printed Matter. Pamphlets, magazines, and other printed matter can quickly be distributed over a large area by use of airplanes or helicopters. The material can be scattered from aircraft flying over the target area, or packages containing material to be distributed by persons on the ground can be air dropped or air landed. Good dispersion has been obtained by hand-scattering leaflets from helicopters flying at forward speeds of 40 to 60 knots.

b. Voice Amplification. Loudspeaker equipment assigned to some PSYOP units can be mounted on helicopters and used to amplify messages prerecorded on tapes or delivered by human voice. These messages normally are delivered at low altitudes from helicopters operating at reduced speeds.

9-9. Personal Contact
Aircraft can be used to move PSYOP personnel, medical teams, government representatives, or other personnel to isolated or distant settlements. The inherent speed of aircraft can enable such key personnel to devote more time to actual task performance and less time to travel.

Section III. REAR AREA PROTECTION

9-10. Staff Procedures.
Rear area protection includes rear area security and area damage control measures and associated political considerations. Rear area security forces and area damage control parties normally are controlled by the operations center of the support command or the director of plans and operations. It may be necessary to give the supported force operational control of certain aviation elements over extended periods of time. The air cavalry troop is well suited to participate in rear area missions as part of the armored cavalry squadron. An aviation liaison officer from the supporting unit should assist in planning for these missions. Detailed planning and decentralized execution are required. A specific aviation unit should be given the mission of supporting rear area operations.

9-11. Coordination
Necessary coordination must be accomplished with—

a. The supported units.
b. Higher, lower, and adjacent units.
c. Army air traffic control elements.
d. Air defense elements.

9-12. Planning Factors
Planning should include consideration of—

a. Pickup points for protection or control parties.
b. Evacuation procedures.
c. Communications.
d. Support of forces, to include ammunition, POL, and maintenance support.
e. Acceptable nuclear radiation dosages.
f. Rehearsals.

9-13. Requirements and Capabilities
a. Effective rear area protection forces must—

(1) Have a high degree of mobility. Army aviation can provide the required mobility to these forces.

(2) Have flexibility in organization to permit tactical tailoring to support a wide variety of protection missions. Army aviation is capable of supporting such missions.

(3) Have adequate firepower to achieve superiority over expected hostile forces. Helicopters can be used to provide close air support and to transport additional firepower means.

(4) Have adequate and efficient communications. Army aviation's capability to provide radio relay stations, transport communications personnel and facilities to relatively inaccessible areas, lay wire, drop and pick up messages, and carry messengers and couriers increases the communications capability of the supported force.

b. Effective area damage control parties must—

(1) Be capable of assuming control at the site of a major incident under a variety of conditions, and of making a rapid assessment of the situation. The capability of aviation to provide aerial observation posts enables observers to survey damaged areas and perform aerial survey and monitoring of contaminated areas. Its capability to patrol the area by air, transport control personnel into the area, and augment communications will greatly enhance the capability of the damage control party.

(2) Be capable of rapid expansion by augmentation from varied sources. The rapid transport capability of aviation may be employed to bring in additional elements.

(3) Be mobile. Aviation can provide mobility to the damage control parties as required.

Section IV. SEARCH AND RESCUE OPERATIONS

9–14. General

Army aviation effectively participates in military and civilian search and rescue missions. These missions may range from situations involving missing persons or aircraft to situations of national disaster. An important military application is in the search and rescue of personnel of aircraft downed in enemy territory.

9–15. Responsibilities and Coordination

a. Civilian Operations. AR 95–1 is the authority for Army aviation participation in civilian search and rescue operations. Liaison must be maintained with the agency responsible for conducting the operation. Coordination for supply and maintenance is accomplished with the nearest appropriate military installation. Areas and methods of coverage will be assigned by the responsible agency. In cases of downed civil aircraft or lost civilian personnel, areas and methods of coverage will be assigned by the civil air patrol.

b. Military Operations.

(1) *Nontactical.* In a nontactical situation, a search and rescue mission for downed military aircraft normally will be the responsibility of the local USAF air rescue service or a comparable Navy or Coast Guard organization. When requested, Army facilities will be made available. Liaison and coordination should be accomplished by aviation units assigned the task of giving assistance. When Army aircraft are involved in the local flying area, the helicopter ambulance air rescue unit or the aviation unit concerned may perform the search and rescue operation.

(2) *Tactical.* To minimize the loss of aviators and crews in tactical operations, each aviation unit must have an effective search and rescue plan. This plan will be prepared by the operations officer in close coordination with the unit intelligence officer. Prior to departing on missions over enemy territory, aviators must be briefed on evasion and escape techniques, including pickup points for rescue. Where appropriate, passengers should also be briefed on emergency procedures and evasion and escape techniques. This briefing is normally conducted by the unit briefing officer in coordination with the intelligence and operations officers. It includes a discussion of the use of distress light markers or other devices to aid search and rescue personnel in locating downed aircraft.

Section V. CIVIL DISASTER RELIEF OPERATIONS

9–16. Authority

Policy guidance and responsibilities of Department of the Army agencies with respect to operations involving participation in natural disaster relief activities are prescribed in AR 500–60. Upon occurrence of a civil disaster, the appropriate Army commander will investigate the situation to determine if aviation will be used in the relief operations. If use of aviation is appropriate, the commander will organize a provisional aviation disaster search and rescue unit under his jurisdiction consisting of such aircraft and personnel as may be required. The officer designated to command this unit normally should be the senior aviation staff officer within the command. This unit will be based, whenever possible, on existing Army, Navy, Air Force, Coast Guard, or National Guard installations within the area nearest the

disaster and will follow prescribed procedures for drawing necessary supplies.

9–17. Missions

Missions that may be performed by Army elements in disaster and emergency operations include—

a. Airlift of medicine, food, and emergency supplies.

b. Air evacuation of victims.

c. Airlift of rescue parties and guidance of surface rescue parties.

d. Message drop and pickup.

e. Radio retransmission operations.

f. Courier service.

g. Insect control.

h. Wire laying for emergency communications.

i. Illumination for night operations.

j. Photographic and reconnaissance missions.

k. Dropping informational bulletins pertaining to—

(1) Areas to be evacuated.

(2) Advice urging the populations to move voluntarily to specified refugee accommodations as directed.

(3) Transportation facilities.

(4) Available escape routes.

(5) Measures to be taken to protect personal property and livestock.

9–18. Planning

The civil disaster and emergency relief plan of commanders of Army areas and oversea major Army commands should clearly outline the missions, responsibilities, and duties of the aviation disaster emergency relief units with respect to administration, operations, maintenance, food service, supply, transportation, medical facilities, and security.

Section VI. SPECIAL OPERATIONS

9–19. Introduction

This section discusses some of the specialized tasks performed by aviation elements in support of the combat unit commander. Most of these tasks can be accomplished by ground means, but can be more efficiently accomplished by use of helicopters. When urgency is a consideration, the use of helicopters may be justified for accomplishment of these tasks.

9–20. Smoke

a. Smoke can be dispensed from helicopters to conceal friendly activities from enemy observers. For instance, smoke can be placed along a tree line near an LZ into which airmobile forces are to be landed. Also, smoke can be placed on a point of possible ambush along a route being used by friendly forces. A factor in planning the use of helicopters is the increased vulnerability at low speeds and in close proximity of enemy troops.

b. Smoke is useful for a wide range of applications including countersurveillance, counterfirepower, and countermobility functions. A major limitation is that a unit using smoke may degrade its own performance more than that of affected enemy units against which the smoke is employed. Therefore, consideration must be given to weather conditions, particularly wind direction.

c. In airborne operations, a smokescreen may be established using air delivered smoke to screen the drop zone during the airborne assault. Helicopters may be used to deliver smoke units for operations within the airhead and for deception missions in areas designated as dummy landing zones. Such employment deceives the enemy as to the extent of operations. Helicopters are also useful for delivery of smoke-producing equipment in inaccessible positions and in resupply of these positions. In offensive airmobile operations, aircraft delivery of screening smoke is planned and employed to deny enemy observation of the objective area during the landing phase. Wind direction and directions of approach and departure of aircraft are considered so that pilot visibility is not obscured.

d. The screening characteristics of smoke make it highly effective for use in denying enemy observation during airmobile operations. Careful planning and coordination are required to insure successful accomplishment of the mission and to avoid use of smoke in such a way as to restrict the movement of the helicopters. In airmobile operations, smokescreens may be established through air delivery means, since smoke generators normally are air landed as a followup action to support the smokescreening operations.

9–21. Mines

a. Mines may be delivered from helicopters for the purpose of creating small, rapidly em-

placed mine blocks, and closing gaps between friendly units or between previously emplaced minefields. Helicopters may also be used to drop fuel-air explosives or other types of explosive devices in order to clear suspected mined areas or initially to clear and prepare helicopter landing zones.

b. Helicopters can be used to lift troops over known friendly or enemy minefields, and to extricate troops who have inadvertently entered minefields. Extrication can be accomplished by such expedients as having troops grasp the skids of a hovering helicopter to be airlifted from the minefield. The possibility of helicopter rotor wash activating the mines must be seriously weighed before attempting such a rescue attempt.

c. Aerial observers or photographs sometimes establish the pattern of an enemy minefield which is not evident to ground personnel.

9–22. Ranger Operations

Helicopters can support ranger operations by moving patrols into remote areas, resupplying them, providing aerial reconnaissance and direct aerial fires, and recovering patrols upon completion of missions. The successful employment of helicopters to support ranger operations is dependent upon the following:

a. Planning. Planning between the ranger unit and the helicopter element providing the aviation support should be detailed enough to cover the mission, sequence of events with a precise time schedule for each event, and a clear delineation of authority to abort the mission at any time prior to insertion of the patrol.

b. Training. The status of training of the ranger and aviation elements must be considered. The most beneficial training will result from the rangers training with the aviation element that is to support the operation. The extent of this training should be considered during mission preparation. Where possible, it should include training in expected phases of the operation which normally would include insertion, resupply, and recovery of the patrol. If other aviation support is envisioned, such as aerial reconnaissance and direct aerial fires, training should also cover those activities.

c. Communications. Mutual understanding of communication procedures and techniques to be used may well be the key factor in ranger mission accomplishment. Perfection of these procedures and techniques during the training phase is highly desirable, especially since these activities may vary considerably from mission to mission.

d. Weather. A detailed weather analysis should be made to cover those phases of the ranger operation that are to be supported by helicopters. In applying the results of this analysis, the aviation commander makes recommendations to the ground unit commander, and the ground commander makes the decision as to whether to start the operation on schedule or to postpone or cancel it. Alternate plans should be established in the event adverse weather reduces or negates the effectiveness of helicopter support during succeeding phases of the operation such as the resupply, aerial reconnaissance, direct aerial fire, and recovery phases.

9–23. Raids

a. Attack Helicopters Conducting a Raid Alone. Attack helicopters performing a raid will normally have the mission of destroying or neutralizing a target by surprise, followed by rapid withdrawal from the target area. Attack helicopters may be used to conduct raids when enemy defenses or positions limit the point fire capabilities of friendly high-performance aircraft, or when the raid target is so located as to be out of range of friendly artillery. The attack helicopter raid is planned to accomplish the mission in two sorties, preferably one on the way in and one on the way out, using attack patterns that will result in maximum destruction to the target. Whenever practicable, the egress route should be different from the ingress route. Success of these helicopter raids is directly dependent upon the effectiveness of enemy air defenses.

b. Attack Helicopters Conducting a Raid as Part of a Larger Force. The tactics and techniques in *a* above may be readily adapted to support a ground force conducting a raid. If the raid force is to be introduced into or extracted from the area by air, attack helicopters may be used to perform a variety of tasks ranging from initial reconnaissance of the target area to providing covering fires for the extraction from the area. Close coordination must be accomplished between the commander of the airmobile force and the attack helicopter mission commander, to include coordination of pyrotechnics and radio signals for lifting and shifting of aerial fires. If appropriate, sufficient ammunition must be held in reserve to protect extraction.

9–24. Riverine Operations

The environment of riverine operations, which

impedes movement of ground troops and vehicles, can make helicopter support particularly effective. Aerial observers may direct escorted forces over selected routes to avoid terrain obstacles and points of possible ambush. Attack helicopters aid in finding, fixing, and attacking enemy forces, and in denying the enemy the day or night use of water lines of communication. In short, aviation can provide superior mobility in an environment in which mobility by surface means is severely limited.

9–25. Counterguerrilla Operations

Attack helicopters are particularly effective against guerrilla forces, to include their employment as aerial escort for troop-carrying helicopters, and in countering guerrilla hit-and-run tactics by responsive delivery of direct aerial fires. By maximum use of the helicopter's flexibility, mobility, and relative immunity to obstacles or barriers, the ground commander can greatly expand his ability to find, fix, and destroy the guerrilla.

9–26. River-Crossing Operations

Each phase of a river-crossing operation may be supported by attack helicopters. During the assault and advance on the enemy side of the river, attack helicopters offer assault commanders the full spectrum of offensive capabilities. During the establishment and protection of the bridgehead, they may be used in their defensive and security roles. Consideration should be given to the attack helicopter's antiarmor capability throughout the river-crossing operation.

CHAPTER 10

STABILITY OPERATIONS

10–1. Introduction

a. US Army forces in stability operations are part of the overall effort in internal defense and internal development. Stability operations are defined as that type of internal defense and internal development operations and assistance provided by the armed forces to maintain, restore, or establish a climate of order within which responsible government can function effectively and without which progress cannot be achieved. Stability operations roles include advisory assistance, intelligence, PSYOP, civil affairs, populace and resources control, and tactical operations.

b. US Army aviation units participate in stability operations by providing support to US forces and by providing advice, assistance, and support to host country forces. Aviation units may be required to support US or host country civil agencies participating in internal defense and internal development operations. Separate aviation units providing assistance or support to the host country will be under the operational control of the senior US officer who is responsible for providing advice, assistance, or support to the operation. Appropriate request channels must be established to insure that aircraft are properly employed and priorities are established to allow for rapid reaction to immediate requirements.

c. The enemy air defense threat to Army aviation in this type of operation often consists only of small arms. This will allow considerably more flexibility of flight tactics than in a hostile air environment.

10–2. Advisory Assistance

Army aviation provides personnel and units for mobile training teams to instruct, advise, and train host country forces in a number of aviation and related subjects. Advice may be provided regarding Army aviation aspects of the host country force's mission. Army aviation units may provide personnel and equipment for mobile training teams and for suppport of other such teams and MAAG missions. Mobil training teams may be comprised of individual specialists, cellular teams, or teams drawn from aviation companies, aviation battalions, or airmobile divisions. Army aviation flight detachments may provide only aircraft support to advisory teams and organizations or they may participate actively in the advisory program. Command and control of aviation mobile training units, as with other stability operations units conducting advisory assistance, is exercised through the commanders of Military Assistance Commands or other designated subordinate commands. It follows essentially the same pattern as command and control procedures for tactical operations. Aviation training teams and units may provide training assistance and advice in the following specific areas of Army aviation utilization:

a. Providing host country aviation students primary and basic flight training.

b. Conducting transition training of rated host country army aviators in new aircraft.

c. Conducting training for host country army aircraft and avionics mechanics.

d. Providing operational training and advice on the employment and operation of host country army aviation units.

e. Conducting training for and advising host country commanders and staffs on all aspects of airmobile operations and army aviation utilization.

f. Conducting training for and advising host country troop units in the conduct of airmobile operations.

10–3. Intelligence

Reconnaissance, surveillance, and target acquisition are the principal tasks of aviation units in the intelligence role. These tasks are performed by use of the following techniques:

a. Visual. Reconnaissance and surveillance tasks are performed by pilots and trained observers in aircraft operating throughout the area of interest. Aviators and passengers, regardless of their mission, should conduct visual surveillance along their routes, especially when flying over hostile areas.

b. Photographic. Aircraft may be equipped with aerial cameras to provide rapid and timely photographic coverage of suspected areas. This coverage can include daylight and night photography, and both area and specific target photography.

c. Infrared and Radar. Infrared surveillance equipment can provide information on insurgent activities hidden by the jungle canopy, e.g., cooking fires. Radar surveillance equipment, with or without data link equipment, may be employed for night surveillance of coastal, river, and canal traffic.

d. Route and Rail Reconnaissance. Constant patrolling of road and rail lines often will deter insurgent ambush. Photographs and visual inspection of rail lines may reveal insurgent sabotage, destruction, and possible ambush sites.

e. Landing Zone and Area Reconnaissance. Deliberate preplanned reconnaissance of landing zones mst be conducted unless requirements for security or surprise restrict such activities. Current records on all landing zones must be developed and maintained.

f. Target Acquisition. Information for timely and adequate target acquisition may be developed from aerial reconnaissance and surveillance missions and from administrative and tactical missions.

10-4. Tactical Operations

a. Army aviation units may provide advice, assistance, or support to host country military forces in tactical operations. Air movement of troops and equipment, to include planned operations and employment of reserves, improves the relative force ratio in favor of stability operations forces. Airmobile operations are conducted with emphasis on mobility of forces, surprise, and speed. Location of staging areas should be based on accessibility to the area of tactical operations, logistical compatibility to support the operation, and security. Applications of airmobility include:

(1) *Airmobile combat patrols.* Airmobile combat patrols, composed of infantry troops transported in helicopters, can attack targets of opportunity and participate in preplanned operations.

(2) *Raids.* Airmobile forces can conduct raids against base areas, command post locations, training areas, and areas considered by the enemy to be secure. In addition to keeping the insurgent force off balance, these raids can provide an excellent method of maintaining the initiative and gathering information on enemy activities. Attack helicopters, operating as an independent force, can conduct harassing missions when use of other combat power is precluded.

(3) *Patrol support.* Aviation elements can support ground patrolling activities by positioning and evacuating personnel participating in patrols, and by providing them with aerial fire support, resupply, radio relay, reinforcement, and medical evacuation.

(4) *Encirclement.* Aircraft can be used in encirclement operations to block gaps by delivery of aerial fires, positioning of reserves, and coordinating movement of converging forces to prevent enemy escape from the encirclement.

(5) *Night operations.* Airmobile operations such as airmobile patrols, raids, and support of ground patrols can be conducted at night. Operations at night deny insurgent forces the freedom of action afforded by a period of darkness.

(6) *Landing zone security and counterambush techniques.* Measures which may be used to provide security for, and to counter ambushes of, landing zones include:

(*a*) Use of decoy and multiple landing zones.

(*b*) Delivery of aerial fires on adjacent landing zones and likely avenues of approach.

(*c*) Use of smoke and riot control agents to mask aircraft landings.

b. Firepower. Fire support for airmobile operations must be thoroughly planned and coordinated, and may include close air support, artillery fires, and naval gunfire. Fire support should be selective in application in order to protect the civil population from the massive, more indiscriminate application of firepower associated with limited and general war situations. Army aviation units can provide firepower in support of tactical operations. The firepower delivered by Army aviation units can be combined with firepower delivered by other services to include the following:

(1) *Close air support.* Close air support, to include prestrike and on-call fire support, should be considered in planning all airmobile operations. This support, provided by tactical air forces is normally controlled by the forward air controller.

(2) *Naval gunfire.* Naval gunfire, when available, can be integrated with artillery fires and close air support missions during preparatory fires for airmobile operations and supporting fires for ground operations. Representatives

of the air and naval gunfire liaison company provide observation and adjustment of naval gunfire.

(3) *Artillery.* Aerial observers can enhance the effectiveness of artillery fires supporting tactical operations by assisting in target acquisition and fire adjustment.

c. Command. When host country forces are supported, command is established based on agreements at the national level for combined operations. The normal situation calls for national integrity of forces under their respective commander. Support may be limited by time, function, mission, or area. Care must be taken to prevent misunderstanding of the degree of support to be provided and procedures to be followed. The presence of US advisory personnel with host country commanders during the planning and execution phases, and the communications of US supporting unit commanders with host country commanders during critical periods are important considerations in tactical operations.

10-5. Civil Affairs

a. Civil affairs include any activity of a command which embraces the relationships among military forces, the civil authorities, and the people. Aviation elements may be called upon to provide advice, assistance, and support to indigenous military forces participating in military civic action projects or to US and host country civil or military agencies participating in other civil affairs activities.

b. Army aviation can provide assistance and support to populace and resources control by conducting operations related to Army aviation tactical and intelligence roles. Surveillance of roads, rail lines, and waterways to detect insurgent activities will assist in the protection of resources. Aerial observation can be employed in support of mobile or fixed checkpoints. Critical supplies may be moved by aircraft to avoid movement by road through insurgent-infested areas.

c. Military civic action is the use of predominantly indigenous military or paramilitary forces on projects useful to the local population at all levels in such fields as education, training, public works, agriculture, transportation, communications, health, and sanitation which would serve to improve the standing of the military forces with the population. When US stability operations forces engage in military civic action, care must be taken to insure that projects are useful and do not conflict with indigenous forces projects or other programs. This is done by coordinating projects through the S5/G5 staff officer.

10-6. Psychological Operations

Army aviation can greatly increase the effectiveness of psychological operations programs. The use of loudspeakers, leaflet distribution missions, movement of personnel, and the movement of PSYOP materiel are the principal tasks of aviation in psychological operations. Every military operation has some degree of psychological impact upon the population. The use of Army aviation will contribute to the psychological impact of military operations and must be considered. The S5/G5 staff officer is responsible for coordination of psychological operations.

APPENDIX A

REFERENCES

A-1. Army Regulations (AR)

95-Series	Army Aviation
310-25	Dictionary of United States Army Terms
310-50	Authorized Abbreviations and Brevity Codes
500-60	Disaster Relief
750-Series	Maintenance of Army Equipment

A-2. Field Manuals (FM)

1-10	Army Aviation Organizational Aircraft Maintenance
1-15	Aviation Company, Battalion, Group, and Brigade
1-40	Attack Helicopter Gunnery
1-60	Army Air Traffic Operations
1-105	Army Aviation Techniques and Procedures
3-Series	Chemical Operations
6-20 Series	Field Artillery
6-102	Field Artillery Battalion, Aerial Field Artillery
7-10	The Rifle Company, Platoons, and Squads
8-15	Medical Service in Divisions, Separate Brigades, and the Armored Cavalry Regiment
17-36	Divisional Armored and Air Cavalry Units
20-60	Battlefield Illumination
24-1	Tactical Communications Doctrine
29-30	Maintenance Battalion and Company Operations in Divisions and Separate Brigades
30-20	Aerial Surveillance-Reconnaissance, Field Army
31-12	Army Forces in Amphibious Operations
31-16	Counterguerrilla Operations
31-18	Long-Range Reconnaissance Ranger Company
31-21	Special Forces Operations—US Army Doctrine
31-23	Stability Operations—US Army Doctrine
31-36(TEST)	Night Operations
(C)31-40	Tactical Cover and Deception
31-50	Combat in Fortified and Built-Up Areas
31-60	River-Crossing Operations
(S)32-1	Tactical Signal Intelligence (U)
(C)32-5	Signal Security (SIGSEC) (U)
(S)32-10	USASA in Support of Tactical Operations (U)
(C)32-20	Electronic Warfare (U)
33-1	Psychological Operations—US Army Doctrine
44-1	US Army Air Defense Artillery Employment
55-1	Army Transportation Services in a Theater of Operations
55-40	Army Combat Service Support Air Transport Operations
57-1	US Army/US Air Force Doctrine for Airborne Operations
57-35	Airmobile Operations
100-27	US Army/US Air Force Doctrine for Tactical Airlift

101-5	SOFM: Staff Organization and Procedure
(C)101-20	US Army Aviation Planning Manual (U)

A-4. Training Texts (TT)

TT 17-37	Air Cavalry Squadron
TT 17-37-3	Air Cavalry Attack Squadron
TT 17-37-4	Air Cavalry Attack Troop
TT 17-37-5	Attack Helicopter Battledrill Handbook

A-3. Technical Manuals (TM)

TM 55-450-8	Air Transport of Supplies and Equipment: External Transport Procedures

APPENDIX B

STANAG NO. 2314

The following information is an extract from STANAG 2314, Organization and doctrine for explosive ordnance disposal operations:

MINIMUM INFORMATION REQUIREMENTS WHEN REPORTING AN EOD INCIDENT

A. DATE AND TIME GROUP AND ORIGINATOR
   1. Reported by (Name, position, address, telephone).
   2. When impacted (if known).
   3. When discovered.
   4. Who to contact on arrival on site if different from 1.

B. LOCATION
   1. Map coordinates.
   2. Street address.
   3. Landmarks.
   4. Type of soil if buried.

C. IDENTIFICATION
   1. Known EO/UXO—give nomenclature.
   2. First seen visible UXOs.
      Description: Shape
      Length
      Diameter/Width
      Colour
      Markings
      Visible fuzing
      nose
      tail
      transverse
      External fittings
   3. Buried UXOs.
      Estimated identification.
      Evidence found at incident site.
      Hole of entry—dimensions.
   4. NBC information, as applicable, for both visible and buried UXOs.

D. SAFETY MEASURES TAKEN.

E. ANY OTHER PERTINENT INFORMATION.

F. SIGNATURE OF EOD PERSONNEL COMPLETING THE REPORT.

APPENDIX C

BRANCH PROPONENCY FOR AVIATION UNITS

Type Aviation Unit	*DIVISIONS*				
	Armor	*Inf (Mech)*	*Inf/Abn*	*AML*	*Separate*
HHC, Avn Bde	----	----	----	----	Avn
HHC, Avn Gp	----	----	----	Inf	Avn
HHC, Avn Bn	Armor	Inf	Inf	Inf	Avn
Aslt Hel Co	----	----	Inf	Inf	Inf
Aslt Spt Hel Co	----	----	----	Avn	Avn
Hvy Hel Co	----	----	----	----	TC
Avn Co, Div	Armor	Inf	----	----	----
Avn Co, GS Div	----	----	Inf	Inf	----
Atk Hel Co	----	----	----	Inf	Armor
AFA Bn	----	----	----	FA	FA
AFA Btry	----	----	----	FA	FA
Atk Hel Bn	----	----	----	----	Armor
Survl Bn	----	----	----	----	MI
Med Air Amb Co	----	----	----	----	MS
Survl Co	----	----	----	----	MI
Avn Co, Army	----	----	----	----	Avn
Avn Co, Corps	----	----	----	----	Avn
Avn Btry, Div Arty	----	----	----	FA	----
Avn Det HHB, Div Arty	FA	FA	FA	----	----
Avn Det HHB, Corps Arty	----	----	----	----	FA
Avn Det HHB, FA Gp	----	----	----	----	FA
HHC Air Cav Bde	----	----	----	----	Armor
Air Cav Sqdn	----	----	----	Armor	Armor
Air Cav Trp	Armor	Armor	Armor	Armor	Armor

Other Units with Organic Aviation

Unit	*Proponent*
Aircraft Maintenance Company (Division)	TC
HHC Brigades (Armor Division)	Armor
HHC Brigades (Inf/Mech/Abn/AML Divisions)	Inf
Separate Brigades	
HHC Abn Bde, Lt Inf Bde, Inf Bde & Mech Bde	Inf
HHC Armor Bde	Armor
Armd Cavalry Regt, Air Cav Trp, HHT ACR, & HHT Cav Sqdn	Armor
ASA Avn Co	ASA
ASA Avn Bn	ASA
Engineer	
HHC Engr Gp or Bde	Engr
Artillery	
HHB FA Gp, Corps Arty, Abn Corps Arty, & FA Bn (Pershing)	FA
Aerial Field Artillery (nondivisional)	FA
Medical Svc	
Hel Amb Team	Med
QM	
HHD AM Petrl, Bn, Gp, Depot	QM
Signal Corps	
Sig Co, Bn, Gp (ALL)	SigC
Aviation Service Support Company	TC
Rear Area Damage Detachment	MP
Missile Comd	ADA
Air Defense Bde, Gp	Air Def
Trans Corps—TC Co DS, GS & SBN Depot	TC
Avn Air Traffic Control Unit	Avn
Avn Operating Teams	Avn

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