FM 57-30

DEPARTMENT OF THE ARMY FIELD MANUAL

AIRBORNE OPERATIONS

DEPARTMENT OF THE ARMY • JANUARY 1952

AGO 2150B—Jan

[redacted]
Security Information

DEPARTMENT OF THE ARMY FIELD MANUAL
FM 57–30

This manual supersedes FM 71–30, 3 July 1947

AIRBORNE OPERATIONS

DEPARTMENT OF THE ARMY • JANUARY 1952

United States Government Printing Office
Washington: 1952

[redacted]
Security Information

AGO 2150B

DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *21 January 1952*

FM 57–30 is published for the information and guidance of all concerned.

[AG 373.21 (18 Oct 51)]

BY ORDER OF THE SECRETARY OF THE ARMY:

OFFICIAL:
WM. E. BERGIN
Major General, USA
The Adjutant General

J. LAWTON COLLINS
Chief of Staff,
United States Army

DISTRIBUTION:

Active Army:

GSUSA (1); SSUSA (1); Tech Svc (1); Arm & Svc Bd (2); AFF (50); AA Comd (2); OS Maj Comd (5) except FECOM (200); Base Comd (2); MDW (2); Log Comd (2); A (20); CHQ (10); D (10); R (5); S Bn (3); Bn (2); FC (2); Sch (5); USMA (50); PMS&T (1); Tng Div (5); Mil Dist (3).

NG: D (5); R (2); T/O&E, 8–15 (1).

ORC: D (5); R (2); T/O&E, 8–15 (1).

For explanation of distribution formula, see SR 310–90–1.

FOREWORD

FM 57–30 Airborne Operations furnishes a broad coverage of the field of airborne operations. Other publications which should be consulted for more detailed reference are—

Airborne division T/O&E.
Infantry division T/O&E.
TM 71–220, Technical Training of Parachutists.
TM 71–210, Air Transport of Troops and Equipment.
FM 57–20, Airborne Techniques, Divisional Units.
FM 100–5, Field Service Regulations, Operations.
FM 101–5, Staff Officers' Field Manual, Staff Organization and Procedure.
FM 101–10, Staff Officers' Field Manual, Organization, Technical, and Logistical Data.
FM 100–10, Field Service Regulations, Administration.
FM 100–15, Field Service Regulations, Larger Units.
USAF 400–5.

The appendixes are designed to furnish detailed information not included in the body of the manual and to supply detailed instruction in airborne operations. The more technical appendixes require study and practice in their use.

The manual will be revised as circumstances require. Comments are invited and should be forwarded to the Commandant, Command and General Staff College, Fort Leavenworth, Kansas.

CONTENTS

[redacted]

This manual supersedes FM 71–30, 3 July 1947

CHAPTER 1
GENERAL

Section I. BASIC CONSIDERATIONS

1. GENERAL

Airborne operations consist of the movement and delivery by air, into an objective area, of combat forces and their logistical support for the execution of ground tactical and strategic missions. Normally, there is an assault phase executed by airborne units which are charged with the mission of seizing the airhead. This may be followed by build-up and exploitation phases accomplished with air-landed reinforcements. Airborne operations capitalize on the speed and flexibility of air power combined with the ability of land power to seize and occupy terrain.

2. Scope

a. This text provides information concerning the joint employment of air and army forces which participate in airborne operations. It further indicates, for guidance of army commanders and staffs, procedures to be used in the planning and execution of such operations.

b. The subject matter is concerned principally with the tactics and techniques employed in airborne operations. Particular emphasis is given to those phases peculiar to airborne operations because of the method of transportation used to place and maintain the participating forces in combat.

c. Where reference is made in the manual to functions and responsibilities of communications zone, it should be understood that similar functions are performed by any administrative area in which an airborne operation is mounted.

d. The term joint airborne force as used throughout this manual refers to either an airborne unified command or a joint airborne task force.

e. Explanation of terms. (See app. XXIII.)

3. TYPES OF AIRBORNE OPERATIONS

Airborne forces are generally employed in close coordination with other land, air, and naval forces. The general missions are to attack, seize, and hold important objectives; to exploit initial airborne assaults; to occupy areas or reinforce units beyond the immediate reach of other land forces; and to occupy or police areas. Airborne operations are classified according to the ultimate purpose for which the operation is designed. There is no definite line of demarkation between types, since an operation may possess the characteristics of more than one of the types listed below. Airborne operations may, however, be expected to fall into one of the following general types:

a. Early Link-up Type Operation. This operation is conceived as a delivery of airborne units into an area in the rear or to the flanks of enemy positions. After seizure of the initial objectives a planned early surface link-up is effected between the airborne units and other friendly forces. Because of the anticipated early link-up, no substantial build-up of troops, supplies, and equipment is planned, other than those delivered in the assault echelon and follow-up. In unusual cases the delivery of airborne units might be to the rear or flanks of partially or completely surrounded friendly units in order to relieve or lessen the enemy pressure.

b. Independent Type Operation. This operation is conceived as being executed in hostile territory, and involves the seizure of an airhead from which further ground, air, or naval operations may be launched. Forces involved will be independent of surface logistical support for an extended period of time.

c. Raid Type Operation. This operation is conceived as the delivery of airborne units into hostile territory for the purpose of destroying or neutralizing enemy forces, installations, facilities, headquarters, or personalities. A planned withdrawal is executed upon completion of the assigned mission.

d. Special Type Operation. This category includes all those operations not properly encompassed by the independent, early link-up, or raid types of operations. Examples of the special type operation are show-of-force, assistance to partisans and guerilla forces, and all operations primarily political in nature.

4. CHARACTERISTICS OF AIRBORNE OPERATIONS

a. Tactical operations of airborne forces differ from those of other normal land forces in that—

(1) There is usually an absence of heavy artillery and equipment in the airhead.

(2) The circular shape of the airhead permits the massing of reserves and artillery fire at threatened points.

(3) The requirement for protection of airfields and strips from enemy observation and fire restricts freedom of maneuver of the airborne force.

(4) The restrictive effect of bad weather is greater.

(5) Supporting services are present in limited numbers initially, thereby increasing the difficulties of control, supply, and communication.

(6) Troops are extremely vulnerable during landing and assembly.

(7) Mobility and fire power of troops landed in the airhead are more restricted. The normal shortage or lack of friendly armor requires the airborne commander to provide other means for antitank defense and offensive power.

(8) The airborne assault is usually delivered into enemy rear areas where there are few fixed defenses and well organized combat troops are not present initially. This condition facilitates the initial attainment of tactical surprise by the airborne force. However, the enemy may thereafter be able to concentrate superior forces.

(9) Because of the various differences enumerated above, it is usually necessary to provide for a greater preponderance of force in an airborne operation than in a similar normal land operation. This superiority gives the airborne commander an essential safety factor in the event of unexpected developments.

b. Relative characteristics of air-landed and parachute operations are as follows:

(1) Parachute operations require specially trained units whereas airplanes can be used to land units which have had a minimum of specialized training.

(2) Parachutists can make day or night jumps. Assault aircraft can land when there is sufficient light to discern terrain features, but they require lighted markers for night landings.

(3) Powered aircraft, except assault aircraft during the assault phase, require use of captured airfield(s) or construction of airstrip(s). Assault transport landings can be made on any relatively level and unobstructed terrain.

Parachute units can land on any terrain which is free of obstacles dangerous to the individual.

(4) Assault aircraft can land heavy vehicles and equipment on terrain which is impracticable for other types of troop carrier aircraft. Vehicles in limited numbers can be dropped by parachute on a wide variety of terrain.

(5) The radius of action is greater for parachute operations than for those which require landing of airplanes to discharge passengers and matériel.

(6) Parachute troops can be delivered into an area faster than air-landed forces; but heavier, better organized, and more powerful units can be delivered by air landing.

5. CONCEPTS OF EMPLOYMENT

a. The employment of airborne forces always envisions—

(1) Use of inherent capabilities of the airplane to overcome distances and geographical barriers.

(2) Use of the forces which are not committed to action as a threat to compel the enemy to disperse defense forces and facilities to protect vital installations.

b. Airborne operations require a high degree of coordination between air, land, and naval forces. Operations should be under theater control for over-all planning and supervision. The responsibility for the entire operation, however, should be vested in a single commander.

c. Air superiority is a fundamental prerequisite. Protection for marshalling, air movement, and establishment of the airhead must be adequate to prevent effective enemy counteraction. *While air superiority is a prerequisite for large operations, it must be realized that limited objective missions can be executed even if the enemy has air superiority. The enemy's air superiority can be counteracted temporarily by massing of friendly fighter protection, by night landings, or by sheer surprise.*

d. In invasion of a large land mass, airborne units will normally be used to make the initial assault. Air-landed units will then be moved into protected landing areas and, when organized, will attack from the airhead. If there is no requirement for an airborne assault, only air-landed units will be employed.

e. To obtain maximum effectiveness in the initial assault, airborne landings must be conducted in mass, with surprise, in the smallest practicable area, and completed in the shortest possible time.

f. When conducted in conjunction with ground or amphibious

operations, airborne operations must be launched to give maximum assistance to the main effort. Airborne attack will thus normally precede the ground or amphibious attack.

g. With present means and methods, airborne operations will normally be conducted in daylight. This does not preclude specific missions to be executed at night when they are required to give maximum assistance to the main effort.

h. Large-scale airborne operations require the seizure of an airhead with characteristics as follows:

(1) Adequate landing areas.
(2) Dominating terrain features or barriers which facilitate defense of the airhead.
(3) Adequate road net connecting the landing areas, the objective, and the dominating terrain features.
(4) Existing airfields, or level, well drained, stable terrain permitting rapid provision for air-landed operations.

6. TROOPS AND FACILITIES REQUIRED TO LAUNCH A SUCCESSFUL LARGE-SCALE AIRBORNE ASSAULT

Troops and facilities required to launch a successful large-scale airborne assault are—

a. Strategic and tactical air forces sufficient to insure air superiority in the operational area.

b. Supply levels, within the theater, for all classes of Air Force and Army matériel which will insure support of the airborne operation on the scale envisioned.

c. Service troops adequate in number, type, and training to supply, stage, and maintain the air and land units employed in the operation.

d. Airborne and other forces properly trained and equipped to accomplish the combat missions assigned.

e. Troop carrier forces whose strength, state of training, and type of aircraft insure successful movement of all necessary equipment and combat and service units.

f. Departure airfields within flying radius of the airhead. These fields must allow dispersion of aircraft.

g. Marshalling areas with adequate service troops, facilities, and equipment to guard, house, and feed troops, and to provide interunit communication and necessary briefing aids.

h. Air-transportable service units to construct advanced airstrips within the airhead and to control air traffic.

i. Units to insure accurate weather information and electronic or visual guides to and from the airhead area.

Section II. COMMAND AND CONTROL OF AIRBORNE OPERATIONS

7. THEATER

a. General.

(1) It is the responsibility of the theater commander to request forces and facilities which are needed to launch required airborne assaults. Within the limits of the means actually provided, he will determine the scope of the airborne operations that can be conducted.

(2) To facilitate and insure integrated preplanning for airborne operations on theater level, an adequate number of specially trained personnel, highly qualified in the techniques, capabilities, and limitations of airborne and troop carrier forces, must be included on the theater staff.

(3) For planning and execution of airborne operations in a theater which has large airborne forces assigned for frequent employment, the theater commander normally establishes an airborne unified command. In a theater where small airborne forces are assigned and their contemplated employment in an airborne role is infrequent, the theater commander may establish a temporary joint airborne task force for the execution of operations as required. (Fig. 1.)

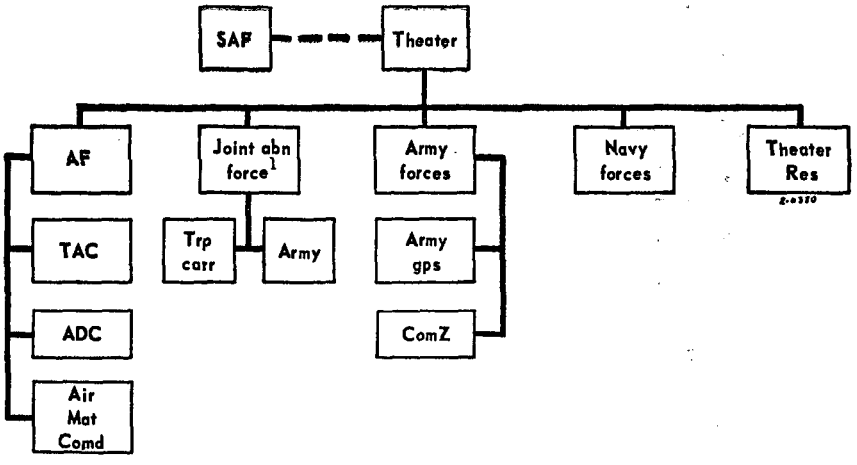
(4) (*a*) The theater airborne unified command normally commands all airborne forces in the theater except those airborne forces which the theater commander temporarily assigns to other forces in the theater. When all airborne forces in the theater are performing their secondary missions, such as employment of airborne units in a ground role and troop carrier units in a cargo transport role, the airborne unified command may be temporarily reduced to a planning entity.

(*b*) The theater airborne unified command develops probable operational plans and, depending upon the size and scope of the operation, continues detailed planning and executes the operation or turns over the detailed planning to a subordinate joint task force which executes the operation. Normally, when the major portion of the theater airborne forces are employed in an independent type operation the theater airborne unified

command executes the operation. When a lesser portion of the theater airborne forces is employed on early link-up type operations, a subordinate joint task force is normally established for detailed planning and execution. Thus one or more joint airborne task forces may be established if the sequence and type of airborne operations in that theater require them.

(*c*) The airborne unified command is responsible directly to the theater commander for continuous airborne planning and for execution of operations. The staff of the airborne unified command contains Air Force, Army, and Navy personnel. Troop carrier and airborne units in the theater are normally under command of the airborne unified commander. For specific operations, additional Army or Air Force units are made available. Fighter and bomber units are normally not assigned but are in a cooperating or supporting role.

(5) The theater joint airborne task force functions in the same manner as the airborne unified command except that its mission is not of a continuing nature and it is established on a temporary basis when the situation in the theater dictates the need for such a force.



[1] May be airborne unified command or joint airborne task force.

Figure 1. Type command structure for a joint airborne force.

(6) A desirable command structure should meet as many of the following requirements as practicable:

(*a*) All participating units are directly under a commander at an echelon high enough to insure effective cooperation.

(*b*) A single commander is responsible for the entire operation.

(*c*) Joint staffs include representatives of all participating and supporting forces.

(*d*) An agency is responsible for continuous joint planning for airborne operations.

(*e*) Theater headquarters controls the operational commitments of troop carrier and airborne units.

(7) Having approved an airborne operation plan, the theater commander—

(*a*) Issues an outline plan and directive to the theater Army commander to support the operation.

(*b*) Issues an outline plan and directive to the theater Air Force commander to support the airborne assault and subsequent ground action, and to furnish logistical support for Air Force elements.

(*c*) Issues an outline plan and directive to the theater Navy commander to support the operation as required.

(*d*) Issues an outline plan and directive to the joint airborne force commander.

(*e*) Issues a directive to theater intelligence agencies to provide necessary information.

(*f*) Plans and controls measures for deception.

(*g*) Coordinates with strategic air forces not under his command.

(*h*) Reviews comments of subordinate commanders and prepares an operation plan or order.

(8) An airborne operation is normally an integral part of a large operation. As such, the arrangements for the airborne operation may be published as a part of the overall plan.

(9) In an early link-up type operation, the airborne force normally comes under the command of the advancing corps or army commander when contact is established on the ground, or at an earlier predetermined time when the commander of the force with whom juncture is to be established is able to control, support, or influence the action of the airborne force prior to juncture.

b. Major Forces. On receipt of the theater directive the Army, Air Force, and Navy commanders—

(1) Review the directive and submit comments to the theater commander.
(2) Allocate necessary forces and facilities.
(3) Assign supporting tactical and administrative missions to subordinate commanders.
(4) Supervise planning and execution by subordinate commands.

8. JOINT AIRBORNE FORCE

a. The airborne force commander, on receipt of the theater outline plan and directive—

(1) Establishes liaison with the theater Army, Air Force, and Navy commanders.
(2) Submits recommended changes in the plan to the theater commander.
(3) Issues warning orders to units allocated for the airborne force.
(4) Organizes the airborne force with the Air Force and Army units allocated.
(5) Prepares an operation plan.
(6) Directs necessary joint training.
(7) Supervises preparation of plans by the troop carrier and Army commanders.
(8) Coordinates with the theater Army, Air Force, and Navy commanders, to insure that the necessary operational and administrative support will be provided.
(9) Plans and supervises measures for deception and issues security instructions to insure secrecy.
(10) Adjusts conflicts between the troop carrier and airborne plans.
(11) Supervises detailed planning in lower echelons.
(12) Supervises execution of the operation.
(13) Releases troop carrier and other units involved in the operation when no longer needed.

b. The coordination of air operations prior to and during the air movement phase of an airborne operation is the most pressing responsibility of the joint airborne force headquarters.

c. In exceptional cases tactical air units, other than troop carrier, may be assigned to the airborne force. In this event, the tactical air command of the airborne force assumes normal command responsibilities.

9. ARMY

a. The army commander will usually be designated as the commander of all units within the airhead.

b. Having received the theater or airborne force directive, the army commander and staff will—

(1) Augment army staff sections with personnel experienced in airborne operations if needed for detailed planning.

(2) Assemble and distribute planning data.

(3) Prepare the ground tactical scheme of maneuver and the logistical support plan. Assign corps missions and phase lines for airhead expansion.

(4) Establish direct liaison with tactical air command and troop carrier command.

(5) Direct and supervise equipping and training of all units.

(6) In conjunction with tactical air commander, develop air-ground support plan and request necessary photo and reconnaissance missions.

(7) In conjunction with troop carrier command, determine general landing areas, total airlift available, departure airfields, and the Air Force and Army units to operate from each. Establish priority for movement of units, equipment, and subsequent supply.

(8) Coordinate with troop carrier command on preoperational training requirements.

(9) Conduct air-ground conferences to insure coordination and understanding of all problems.

(10) Establish direct liaison with communications zone and advise theater and communications zone as to supply and marshalling requirements.

(11) Requisition equipment necessary for the operation.

(12) Announce to army service troops and attached units their airhead support missions.

(13) Within the means allocated by airborne force, plan, in conjunction with appropriate air force headquarters, and supervise construction or rehabilitation or both of airstrips and airfields within the airhead.

(14) Issue instructions on and supervise security measures to insure secrecy in preparation.

(15) In coordination with the communications zone and troop carrier agencies, prepare the army marshalling plan.

(16) Supervise final preparation for combat.

(17) Direct the army in the ground operations.
(18) Exercise over-all control of the airhead until contact is made with advancing ground forces or until an earlier predetermined time.
(19) Coordinate with designated army group for ground juncture with airborne force.

10. CORPS

a. The airborne assault corps commander and staff, upon receipt of army directive, will—

(1) Augment corps staff with airborne specialists if needed for detailed planning.
(2) Prepare corps operation plan.
(3) Establish liaison with the troop carrier unit assigned to transport the corps, and with the follow-up corps.
(4) In conjunction with the troop carrier unit, determine division landing areas; adjust airlift and departure airfield requirements; and, within the framework of the movement priority established by army, publish the corps air-movement table.
(5) Submit request to army for required air support and reconnaissance.
(6) Submit preoperational training requirements to army.
(7) Conduct air-ground conferences.
(8) Requisition, through army, necessary equipment.
(9) Supervise marshalling of the corps and final preparation for combat.
(10) Direct the corps in its ground assault to attain initial objectives and protect air-landing operations which follow.

b. The follow-up and air-landed corps commander, upon receipt of the army directive, will—

(1) Prepare corps operation plan.
(2) Establish liaison with troop carrier units assigned to transport the corps, and with the assault corps.
(3) In conjunction with troop carrier units, adjust airlift and assign departure airfields.
(4) Initiate air movement training and submit preoperational training requirements to army.
(5) Requisition, through army, necessary equipment.
(6) Supervise marshalling of the corps.
(7) Supervise phasing of the corps into the airhead in accordance with the orders of the airborne force commander.

(8) Direct operations of the corps in the exploitation phase of the airborne operation.

c. An independent corps performs most of the army functions listed in paragraph 9.

11. DIVISION

a. Having received the corps plan, the airborne division commander and staff will—

(1) Prepare division operation plan.
(2) Establish liaison with troop carrier units assigned to transport the division.
(3) Determine specific drop and landing zones for combat teams and adjust details of airlift and departure airfield requirements in conjunction with troop carrier units.
(4) Prepare the division air movement table within the plan prescribed by corps and in conjunction with troop carrier commander.
(5) Submit requests, through corps, for required air support and reconnaissance.
(6) Conduct air-ground conferences.
(7) Marshal the division as directed by corps and the communications zone.
(8) Issue instructions on and enforce security measures to insure secrecy in preparation.
(9) Direct the division in ground assaults.

b. The air-landed infantry division commander, upon receipt of the corps plan, will—

(1) Prepare division operation plan.
(2) Establish liaison, with troop carrier units assigned to transport the division and coordinate air movement of divisional units.
(3) Conduct scheduled air-movement training.
(4) Stage and air-land the division as directed, and complete assigned ground mission.

c. An independent division performs most of the functions listed in paragraphs 9 and 10.

Section III. ORGANIZATION AND FUNCTIONS OF ARMY AND AIR FORCE UNITS WHICH PARTICIPATE IN AIRBORNE OPERATIONS

12. THE AIR FORCES

a. Strategic. In airborne operations, strategic air forces may assist in maintaining air superiority, conduct aerial reconnais-

sance deep in enemy territory, and reduce enemy mobility by attacks on his transportation and defense systems.

b. Tactical. Tactical air forces will join in the early planning to direct the supporting air effort throughout all phases of an operation.

c. Troop Carrier. Troop carrier forces will provide tactical and administrative air transportation of cargo and personnel within the theater.

d. Air Defense. Air defense units will provide for the air defense of rear areas which usually include departure bases and airborne training and marshalling areas.

e. Air-Sea Rescue. Air-Sea Rescue Service, composed of air, land, and naval units, will locate and rescue the survivors of disabled aircraft.

13. TROOP CARRIER UNITS

a. Mission. Troop carrier units provide combat and administrative air transportation within the theater. Their functions are in contrast to those of the Military Air Transport Service which operates administrative flight service from the zone of interior to, and between, theaters. The Military Air Transport Service does not engage in combat operations.

b. Organization. (Fig. 2.)

(1) Troop carrier units are organized into a command with two or more air forces, each consisting of two or more air divisions. The organization of a tactical air force (troop carrier) is extremely flexible and subject to considerable variation. The aircraft included in the troop carrier air force will vary in numbers and type depending upon the conditions under which an operation is envisaged.

(2) The troop carrier division is an intermediate organization which is required for efficient control and administration. Troop carrier air divisions may have wings equipped with medium assault aircraft (C–123), medium transport aircraft (C–119) and heavy transport aircraft (C–124) depending on the varying requirements.

(3) The troop carrier wing, with its combat group of four squadrons, plus service elements, is normally based on a single airfield and is the operating unit that provides air transportation for cargo and personnel. Individual wings are equipped with a single type aircraft. A troop carrier

wing (pathfinder) is under the direct control of the tactical air force headquarters.

(4) The troop carrier group is the operational element of the wing and has four squadrons of either 16 aircraft, medium, or 12 aircraft, heavy. Thus a medium group has 64 aircraft and a heavy group has 48 aircraft.

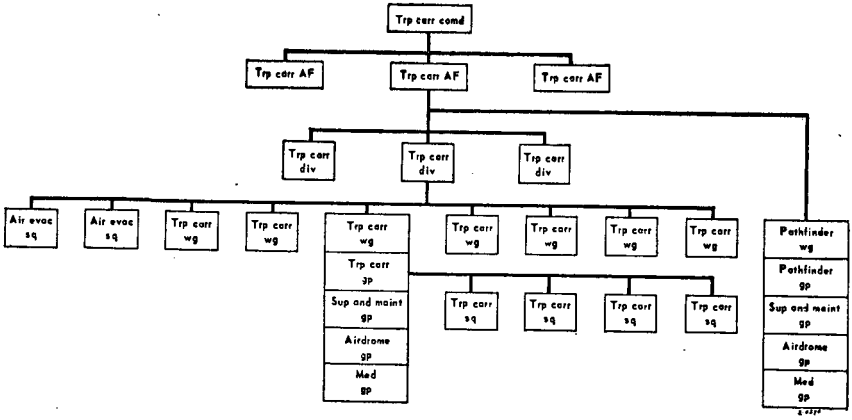


Figure 2. Typical organization of a troop carrier command.

(5) Air evacuation squadrons are usually assigned to troop carrier divisions. Flight nurses and assistants from these squadrons accompany airplanes which land cargo or personnel in forward areas and then receive and provide in-flight care for casualties.

(6) The supply and maintenance group, the airdrome group, and the medical group are the organic elements of a wing stationed on each airfield to provide administrative, logistical, and technical support for the air combat group operating from the airfield.

(7) Troop carrier combat control teams (not shown on fig. 2) are specially equipped and trained to serve as air coordination parties in the airborne assault area. Two teams normally accompany each division into the objective area. The second team provides complete replacement in personnel and equipment to insure reliable communication. The teams establish radio contact with the rear troop carrier command post to transmit weather reports, information concerning known strength of points of resistance which may be avoided en route to drop zones or landing zones, hazards in landing zones, changes in location of landing areas, and other informa-

tion vital to air operations. Such control teams are evacuated as soon as replaced by advanced landing-field parties or upon ground link-up with advancing friendly forces.

(8) Advanced landing-field parties (not shown in fig. 2) are specially equipped and trained to exercise control of all aircraft operating on advanced landing fields. Two parties will normally be assigned to each airfield to provide reliable communication. The parties will assume such duties of the combat control teams as are applicable and will, within capabilities, maintain complete airfield communication and control facilities, including control of ground traffic within the airfield limits.

c. Flexibility. Flexibility is the keynote of troop carrier organization. Troop carrier command headquarters may be in one theater and one or more of its air forces working in adjacent theaters. The mobility of troop carrier forces, afforded by organization and equipment, provides the capability of rapid concentration to meet any situation with the greatest economy of force.

d. Favorable Characteristics.

(1) Troop carrier units are equipped with the most suitable aircraft for parachute, and air-landed operations. They possess the ability to transport personnel and equipment of airborne forces to any desired area within the operating range of the aircraft.

(2) Operations can be conducted by day or night. Cargo airplanes are equipped with instruments and landing lights for night flying. Troop carrier pilots are trained for close formation flying, in both daylight and darkness, and assault aircraft pilots are trained to make landings in small fields by day or night.

(3) Opportunity is usually afforded to prepare and rehearse for a specific operation.

e. Unfavorable Characteristics.

(1) Troop carrier airplanes are relatively slow, not readily maneuverable, and may become easy targets for enemy fighter aircraft and ground fire. No provision (in the form of armor plate) is made for the protection of passengers and no armament is installed for defense against enemy aircraft.

(2) Special navigational aids may be required for locating objectives in enemy territory.

f. Operational Effectiveness. In the initial stages of an airborne operation, it will be unusual for aircraft to fly their full range

and refuel at forward airfields. *Radius of action* will, therefore, be the deciding factor in tactical operations; but *range* will be the consideration in strategic and administrative moves.

g. Aircraft Availability. The number of aircraft which a troop carrier wing can make available for an airborne operation is normally less than its organic strength in aircraft, because some of the aircraft are grounded for routine inspections and maintenance or because of battle loss or damage. The actual number or percentage of aircraft available will vary with the type of airplanes, maintenance conditions, type of missions, unit training, duration of operation, and enemy opposition. For short periods of a month or less and under good conditions, a troop carrier wing or larger unit can furnish about 80 percent of its organic aircraft daily. However, by grounding troop carrier units for 2 or 3 days prior to an operation in order to perform maintenance, a greater number of aircraft can be made available for D-day operations. The number of aircraft which troop carrier can provide is of vital importance to airborne planners. For each operation, the troop carrier commander must advise the airborne commander as to the number of aircraft that will be available on D-day and the estimated number of aircraft to be available on each subsequent day of the operation. The number of aircraft trips available on any 1 day may be increased by flying two or more sorties per airplane per day.

h. Types of Aircraft. The following three types of aircraft are suited to troop carrier operations:

(1) Medium assault airplane with a 16,000-pound design capacity. It is designed to permit landing, unloading and take-off in unprepared landing zones, heretofore suited only to assault glider landings. This airplane can easily be adapted to parachute operations, thus providing an airplane suited to all types of airborne missions. The standard medium assault airplane is currently the C–123.

(2) Medium transport airplane with a 20,000-pound design cargo capacity. The medium transport airplane is the principal type used in an airborne assault. Its primary missions are delivery of parachute troops, delivery of parachute supply, heavy equipment, vehicles and weapons, and landing of cargo on hastily prepared airstrips. As a result of this flexibility, it can participate in any phase of an airborne operation except assault landings on unprepared airstrips. The standard medium transport airplane is currently the C–119.

(3) Heavy transport airplane with a 50,000-pound design

cargo capacity. The primary mission of the heavy transport airplane is the landing of cargo on prepared strips. While its desirable secondary missions are the delivery of parachutists, parachute supply, heavy equipment drop and towing of assault aircraft, the heavy transport is presently used only to air-land personnel, equipment, and supplies. However, with minor modifications, it is capable of performing all of the aforementioned missions. The standard heavy transport airplane is presently the C–124.

14. THE ARMY

a. Every field army must be capable of conducting large-scale airborne operations. An army so designated should be given a warning directive at least 45 days prior to the operation.

b. The theater commander may direct an army headquarters, with appropriate supporting troops, to devote itself primarily to preparation and training for airborne operations. This will decrease the time necessary for an army to plan and prepare to execute a specific airborne mission.

c. The strength, composition, and equipment of units assigned to an army for an airborne operation are contingent on the area, expected enemy reactions, probable duration of the operation, aircraft and troops available, and the assigned tactical mission.

d. The army commander usually exercises closer personal control than in other types of operations. He influences the action by continually securing and disseminating information of enemy forces which may affect the army; by his presence in critical areas; by changing corps boundaries, missions, and objectives; by shifting troops; by use of artillery and guided missiles; by committing reserves; by arranging for support aviation; by allocation of administrative support; and by timely shifts of priorities for air movement into the airhead.

e. After the initial combat phase of an airborne operation has been completed, the army operates in its normal ground role.

15. THE CORPS

a. Every army corps is presumed to be capable of commanding an appropriate number of airborne divisions, air-landed divisions, or a combination of both types, in either the assault, build-up, or exploitation phase of an airborne operation. This flexible use of any corps headquarters presupposes continuing army-wide indoctrination and training in airborne operations.

b. In a separate corps airborne operation, the corps will normally operate directly under the joint airborne force commander until such time as the established airhead has been reached by standard ground units. At the time of link-up, the corps will normally revert to command of an appropriate army.

c. Any corps designated to command airborne units should be given the earliest possible warning directive to permit it to complete preparations for executing the mission. A minimum of 30 days for an assault corps, and 20 days for a follow-up corps, is considered essential. During this readiness phase, a separate corps must complete all the preparations listed for the army. Such an independent corps would operate necessary administrative installations. A corps subordinate to an army for an airborne operation should be relieved of administrative functions and be permitted to confine its preparations principally to planning and training for its part in the tactical ground operation.

d. The theater commander may direct one or more corps headquarters, with appropriate supporting units, to emphasize planning and training for airborne operations. This directive would not preclude the commitment of the designated corps headquarters to standard ground operations. The decision to direct such specialization would largely depend on the anticipated number and frequency of airborne operations and the number of corps headquarters available in the theater.

e. The strength, composition, and equipment of units attached to a corps for an airborne operation are contingent on the mission, the area of operation, the expected enemy reaction, enemy capabilities, the probable duration of the operation, and the aircraft and troops available.

f. In an airborne operation, the corps commander usually exercises closer personal control than in other types of operations. This closer control is necessitated by the fluid character of combat in an airhead which requires rapidity of decision and aggressive action. The corps commander in an airborne operation influences the action by his presence in critical areas; by changing boundaries, missions, and objectives; by committing reserves; by use of artillery and guided missiles; by shifting corps troops and logistical support; by influencing the use of combat aviation; and by recommending timely shifts of priorities for air movement of troops, equipment, and supplies. After the initial combat phase has been completed, the corps operates in its normal ground combat role.

g. A corps may participate in airborne operations in the following manner:

(1) An operation by an airborne division or smaller unit in which the corps supervises the planning and execution of the operation, but the corps itself is not committed in the objective area.
(2) An airborne operation of two or more airborne divisions where quick ground link-up is expected. The corps participates by supervising the planning and execution and may commit a small headquarters and a minimum of corps support troops into the airhead.
(3) An operation of larger scale in which the corps is the senior army headquarters, and in which a prolonged period in the airhead is contemplated. In such an operation, additional supervising personnel and service units must be provided to carry out as a minimum those administrative functions normally performed by the army.
(4) Large airborne operations in which the corps is one of several committed. For a portion of the operation, an assault corps may carry out certain army administrative functions before the arrival of the higher headquarters in the objective area.

16. THE AIRBORNE DIVISION

a. The basic large tactical airborne unit is the division. Its primary role is to make parachute and assault aircraft assaults. It is capable of landing in unprepared areas and immediately and effectively engaging the enemy. The initial lack of heavy weapons in the airhead must be compensated for by superior combat training, effective use of surprise, and preponderance of force. The airborne division, as initially committed, can be expected to fight and exist as a tactical unit without relief or resupply for 48 to 72 hours.

b. The division requires at least 7 days to prepare for an operation unless already marshalled at departure airfields. When marshalled, this period may be reduced to 48 hours.

c. In organizing for combat, the division is divided into the assault, follow-up, and rear echelons. The assault echelon normally includes parachute and assault aircraft elements. The follow-up echelon may include airplane, overland, or seaborne elements. The rear echelon includes administrative personnel and the parachute maintenance company. Priority of aircraft is given to units in the order in which they are needed in the assault. This priority is established by combat teams or by each regiment, separate battalion, and separate company as dictated by function, by weight, and by bulk of organic equipment.

d. The major elements of the airborne division are the same as those of an infantry division with the exception of a pathfinder detachment in division headquarters company, antitank platoons, and a parachute maintenance company. For further details on the organization of the airborne division see appendix I.

17. THE AIR-LANDED UNIT

a. Any unit may be adapted for air movement after sufficient training and with certain modifications of equipment, although extensive modification may preclude the unit's efficiently performing its primary mission and thus make air transport uneconomical. With the exception of heavy and medium armor, some heavy artillery, and heavy engineer equipment, the infantry division, the corps, and the army can now be prepared for movement by air.

b. Air movement of other than airborne forces is justified when geographical obstacles, hostile forces, distances, and time considerations preclude or seriously limit the use of other types of movement.

Section IV. THEATER ORGANIZATION FOR LOGISTICAL SUPPORT OF AIRBORNE OPERATIONS

18. GENERAL

a. The theater organizational structure and the number, type, and scope of airborne operations contemplated in the approved theater campaign plan will combine to dictate the logistical organization required to support the airborne operations in that theater.

b. Logistical support of airborne operations is normally furnished on a uniservice basis, coordinated by the joint airborne force commander to the extent necessary for the accomplishment of the airborne mission.

c. A joint logistical operating organization may be established when uniservice support coordinated by the joint airborne force commander is not capable of providing effective support as a result of—

(1) The scale of the forces involved.
(2) The complex nature of the operation.
(3) Peculiarities of the theater (geography, location, size, and the service having primary interest).

19. ORGANIZATION, COMMAND AND CONTROL OF AIR TRANSPORT OPERATIONS IN THE THEATER

a. There are two types of air transportation in the Air Force:

strategic and tactical. While both types provide air transportation for personnel and supplies, they should not be considered as having the same mission.

(1) The Military Air Transport Service (MATS) provides intertheater or strategic air transportation. MATS has the normal mission of providing world-wide logistical support by air and is normally employed on regularly established routes on a scheduled basis. MATS operations are normally controlled by MATS headquarters located in the zone of interior.

(2) Troop carrier units, in addition to their primary mission of transporting airborne units into combat, provide tactical or intratheater air transportation. Airborne operations are usually of comparatively short duration at infrequent intervals. Hence, maximum efficiency in the employment of troop carrier aircraft is achieved only if plans and organizations exist which utilize troop carrier aircraft in their secondary role of providing air transportation.

b. The aerial port command is an Army transportation organization with command and operational control over the terminal operations at aerial ports in a theater. An aerial port consists of the installation, facilities and personnel or organization which are required for the performance of the terminal operations, i.e., those operations which effect control over the ground movements of cargo or personnel to be transported by aircraft. The terminal operations include—

(1) Call Forward of cargo and personnel from supply installations to point of transfer to air transport.

(2) Coordination with an Air Force agency to insure that such Call Forward is in consonance with aircraft schedules.

(3) Intransit storage of Army cargo.

(4) Checking adequacy of packaging, marking, and documentation to insure identification at destination.

(5) Loading and unloading of cargo and/or personnel into or from the aircraft.

(6) Clearance of cargo and personnel from terminals to insure timely delivery to consignee. An aerial port does not include the aircraft involved in the air transport operation, nor any other facilities on the base or airfield for the maintenance, operation or control of aircraft or Air Force personnel concerned with aircraft operation.

c. Aerial ports are located on or at designated arrival or departure airfields which are required for intra-theater air movement of cargo or personnel in support of combat or administrative operations.

d. Control, administration, and supervision of theater policies regarding air transportation at theater level is exercised by the theater commander through the Theater Air Transportation Board. When army interest in this means of transportation is predominant, control of aerial port ground cargo and personnel handling operations is through the theater Army commander. The theater commander controls troop carrier operations through the theater Air Force commander. Thus army aerial port organizations combine with troop carrier units to provide the theater air transportation service.

e. Normal Air Force organization for air transport operations places the troop carrier force as a major theater Air Force command or a numbered air force, depending on its size, under the command of the theater Air Force commander.

f. The theater Army commander may discharge his responsibility for the operation of aerial port organizations in several ways, depending upon the geographics and logistical organization of the theater. In a theater established on a land mass and in which army logistical responsibility is vested in a communications zone, control of aerial ports is usually delegated to the communications zone commander. The communications zone commander normally establishes an aerial ports command which operates similar to any intersectional service of the communications zone. When the geographics of the theater are such that logistical responsibility is delegated to commanders of base or island commands, the responsibility for operation of aerial port facilities may be given to such commanders or may be retained directly under the theater Army commander. In the latter case, the theater Army commander usually establishes an aerial ports command for the control of aerial ports.

g. When an airborne operation is carried out, troop carrier forces are normally placed under the command of the airborne force commander. The size of the operation and its duration will dictate the portion of the troop carrier forces available in the theater which are so used. Aerial port organizations may be called upon to assist in mounting airborne operations and/or to perform the terminal operations in connection with the logistical support of airborne operations. The number of aerial ports involved in support of an airborne operation ordinarily will be the minimum number determined essential to provide adequate operational and

logistical support to the operation. Since airborne operations normally will be mounted from a considerable number of airfields other than those which have been designated as aerial ports, personnel from aerial port organizations may be placed on temporary duty at such departure airfields for the purpose of assisting the mounting, when so required. When the aerial port facilities are controlled by communications zone and communications zone is given responsibility for mounting the operation, control of the port organizations will usually remain with the communications zone. Where theater Army Commanders directly control the ports, the required number of ports will normally be assigned to the airborne force commander who will be responsible for their operation in supporting the airborne force. Where aerial ports are under a base command which is responsible for mounting the airborne operation, they will normally be retained under control of the base command.

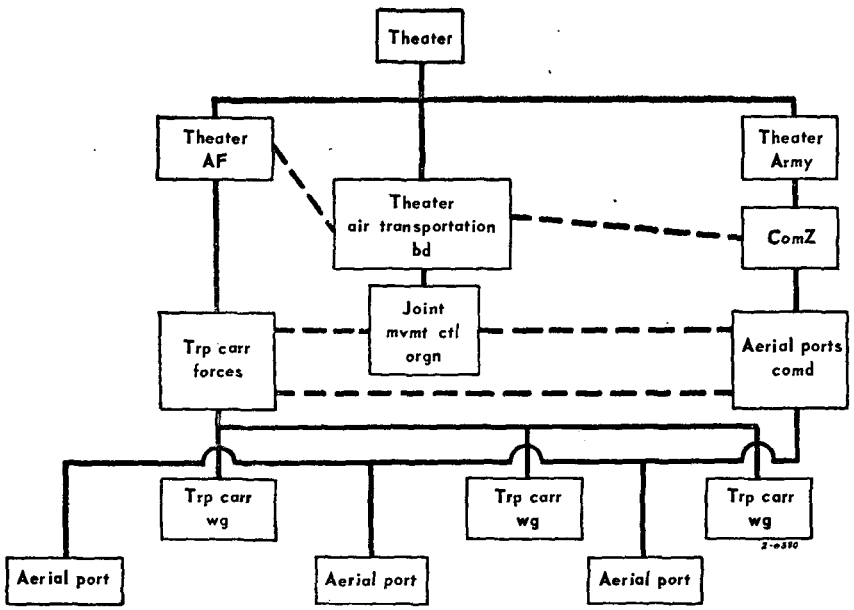


Figure 3. Type command structure for theater air transport operations.

20. MOUNTING AGENCIES

a. Normally the army communications zone is given the responsibility for mounting airborne operations. Communications zone delegates mounting responsibility to one of its subordinate sections if the mounting area and the major portion of the departure air-

fields are within the territorial limits of a single section. Where the mounting area and airfields are in more than one section, communications zone assigns appropriate missions to each section and closely coordinates and supervises their activities.

b. In unusual situations, or where a communications zone or similar agency has not been established, or where the communications zone facilities are not located in the vicinity of the mounting area, an organization for mounting the operation may be established under the command of the airborne task force commander.

CHAPTER 2

PLANNING AND PREPARATION FOR AN AIRBORNE OPERATION

Section I. PLANNING PROCEDURE

21. PRELIMINARY PLANNING

a. At theater, preliminary tactical planning includes selection of tentative airborne missions based on—

(1) Predicted rate and extent of advance of ground operations.
(2) Predicted state of readiness for combat of airborne and other air-transported units.
(3) Predicted availability of logistical support.
(4) Predicted availability of aircraft.
(5) Enemy capabilities and probable enemy reaction to planned ground operation.
(6) Terrain analysis.

b. By correlating these factors, the theater planning staff conceives possible airborne operations. From among these emerge certain probable operations which are assigned to subordinate units for development.

c. A unit directed to plan one or more airborne operations begins planning immediately on receipt of a directive and continues until the operation is either canceled or executed. The unit plans its tactical operation within the limits of availability of aircraft, logistical support, and intelligence of the projected landing area. The amount of detail in planning, and the detail in which intelligence is sought, will vary with the echelon of the headquarters.

d. Collection, evaluation, and interpretation of information should result, for preliminary planning, in dissemination of the following intelligence planning data to subordinate units:

(1) Small-scale air photos of the landing area.
(2) Large-scale photos of the landing area for selecting assembly areas and planning ground operations.
(3) Air photo and interpretation reports covering enemy activities and ground and air installations within and adjacent to the projected airhead.

(4) Aerial reconnaissance reports.
(5) Overlays prepared with descriptions of obstacles, defensive works, navigational hindrances, and landing areas.
(6) Necessary maps.
(7) Enemy capabilities.
(8) Information concerning enemy methods and tactical procedures.
(9) Special studies applicable to the airhead.
(10) Accurate large-scale terrain models of the landing area.

22. PLANNING DIRECTIVE

a. Warning directives from higher headquarters may be oral and fragmentary in the early stages of planning. A complete directive is issued later, usually as a result of a joint theater conference.

b. Directives issued at all levels of command should contain the following information:

(1) General mission and plan.
(2) Approximate time and duration of operation.
(3) Necessary intelligence (including enemy order of battle).
(4) Plans for deception and secrecy.
(5) Friendly troop list.
(6) General landing area.
(7) Composition, equipment, and departure airfields of air force units.
(8) Necessary logistical information and instructions.
(9) Signal communication arrangements.
(10) Pathfinders and guides.
(11) Special equipment.
(12) Arrangements for altering or canceling operation.

23. PLANNING TECHNIQUE

a. General. An airborne operation plan is the outgrowth of continuous preliminary planning developed by theater and unit staffs. This continuous planning must be consistent with the changing tactical and logistical conditions in the theater. Detailed planning is then best developed by backward planning from the objective area and in the following sequence:

(1) Develop ground tactical plan, determine strength and composition of the forces required, and then begin development of the logistical plan.
(2) Develop a landing plan which indicates the sequence, time, and place of arrival of troops and matériel.

(3) Prepare flight and air movement plans based on the landing plan.

(4) Prepare marshalling plan based on plan of air movement.

b. Simplicity. Simplicity must be the guiding principle if an involved operational plan and an excessive time requirement for planning are to be prevented. To attain simplicity—

(1) Do not inject an airborne operation into a major ground operation which is already planned, when sufficient time is not available to integrate completely the airborne participation.

(2) Do not depend on a plan which is entirely contingent upon the arrival of any one air serial or tactical unit.

(3) Do not prescribe difficult and distant objectives immediately after landing.

(4) Do not duplicate objectives.

(5) Avoid involved assembly plans.

(6) Prescribe directional changes in the air route only at prominent check points.

(7) Use landmarks which are easy to locate and identify from the air.

(8) Avoid a complicated scheme of landing.

(9) Make sufficient allowance in air-movement tables for operational delays in take-off, assembly of air formations, and landings.

(10) Avoid splitting a tactical unit between serials.

(11) Avoid a complicated plan for distribution of troops at departure airfields.

c. Standing Operating Procedures. Planning time requirements can be reduced by development of airborne, troop carrier, and communications zone standing operating procedures.

Section II. TACTICAL PLANNING

24. AIRBORNE FORCE ASSAULT PLAN

a. General. Paragraphs 25 and 26 are generally based upon planning for an airborne division in the assault, however, the sequence of planning and the tactical principles and techniques are equally applicable to larger units.

b. Responsibilities. For responsibilities of the airborne commander in planning, see appendix VII.

(1) Upon receipt of a directive and assembly of necessary planning data and intelligence, active planning is be-

gun. Planning follows the same principles as in normal ground operations but must include appreciation of air and airborne technical problems.

(2) The plan for the airborne assault and seizure of the airhead must be prepared with minimum delay. Much detailed planning, particularly as to supply, communication, and air operations is dependent on this plan. Development of the plan involves consideration of the strength and composition of forces; mission assignments; area of attack to include principal drop and landing zones, airstrips, and airfields to be captured; the general plan of maneuver for major combat elements; enemy capabilities; the approximate date and time of the landing; the general plan of supply for the force; and the assignment of troop carrier units to lift elements of the force.

(3) The final attack plan is based on assault plans as modified by and integrated with troop carrier and tactical air capabilities.

c. *Composition of the Airborne Force.*

(1) The airborne force must be organized to execute the mission or missions assigned. No standard organization can be prescribed in advance to meet all conditions.

(2) Combat elements of the airborne force are selected in accordance with the mission and operating conditions imposed. These may include parachute, assault aircraft, or other air-transportable forces, or any combination thereof. Supporting elements may include chemical weapons, field artillery, antiaircraft artillery, aviation engineers, combat engineers, medical, and other service units, depending on the need. If ground link-up or juncture is expected within a relatively short time, some of these elements may move with an overland or sea element.

(3) When practicable, reinforcing combat and supporting service units should be made available to the airborne commander throughout the period of preparation for, and the execution of, the airborne operation.

(4) Troop and cargo-carrying capabilities, availability of aircraft, the initial landing capacity of the airhead, and other limitations impose definite restrictions on the organization of the airborne force. Special planning is, therefore, necessary to reduce aircraft requirements and insure maximum fire power and mobility in the parachute or assault aircraft elements.

25. ORGANIZATION FOR COMBAT

a. General. Upon the assignment of a specific airborne mission, the airborne division is habitually organized into three echelons: the assault echelon, the follow-up echelon, and the rear echelon.

b. Assault Echelon. The assault echelon is composed of the parachute and assault aircraft elements which are used to seize an airhead. The assault echelon consists of the combat teams, the division reserve, division troops, and combat units not attached to combat teams.

(1) *Combat teams.* The basic combat team organization for an airborne assault is an infantry regiment and an artillery battalion with such attachments or detachments as the situation requires. Combat team formations should be terminated as soon as centralized control is practicable, usually as soon as initial objectives are seized.

(2) *Division reserve.* The division reserve normally consists of an infantry battalion. Units designated as reserve may have a limited combat mission upon landing, such as protecting a landing zone. Thereafter, these units assemble in a central location for employment as division reserve.

(3) *Division troops.* Division troops consist of the command, control, and administrative elements necessary for centralized direction.

c. Follow-up Echelon. The follow-up echelon is that part of the division (less rear echelon) which is not initially brought into combat by air transport but which joins the assault echelon as soon as possible after the airhead has been seized and secured. This echelon may move by sea, air, overland, or a combination of these methods. Depending upon the means of transportation used, the follow-up echelon will consist of additional vehicles and heavy equipment of units in the assault echelon and organic units of the division not in the assault echelon.

d. Rear Echelon. The rear echelon is that part of the division which is left at the base camps to perform administrative functions which are most efficiently accomplished in the rear. It normally consists of the parachute maintenance company, and the administrative elements of the division and its subordinate units.

26. OPERATIONAL PLANN'NG PROCEDURE

a. Preliminary Planning. Preliminary planning is essential if any specific operation is to be executed efficiently on short notice. A major task in this planning is the preparation of aircraft require-

ment tables. Obviously, it is impossible to have tables covering every conceivable combination of parachute airplanes and assault aircraft. However, a group of tables showing the number of airplanes required for optimum operating conditions and the requirements for minimum operating conditions should be prepared. Supplementary tables for conditions between optimum and minimum expedite planning upon receipt of a mission. These tables serve as a basis for scaling down the division after the allocation of aircraft for a particular operation is received.

b. Planning Sequence. The orderly development of a complete plan for an airborne operation is based on backward planning from the objective area in the sequence: tactical plan, landing plan, air-movement plan, and marshalling plan.

c. Tactical Plan.

(1) The mission of an airborne operation as assigned by higher headquarters may vary from a very general mission such as "Land in the vicinity of———————— and block the movement of enemy troops from the north" to a very specific mission such as "Seize and hold the bridges at ————and————until relieved by III Corps."

(2) On receipt of an assigned mission, the airborne division commander translates the mission into terms of objectives on the ground which must be seized and held to accomplish the mission. After considering the delay required, the frontages, the terrain, the enemy, and our own forces, positions are selected forward of the objectives, on each major route of enemy advance on which the division will stop or delay such advance. A line connecting these defensive or delaying positions is drawn and becomes the airhead line. A reconnaissance and security line is placed in advance of the airhead line. Outposts and patrols are pushed forward to this line immediately on landing. It may be desirable to designate defensive positions inside the airhead line in order to facilitate organization of the ground and to coordinate any retrograde movements.

(3) Each of the three combat teams is then assigned an area by drawing boundaries including the objectives and the portions of the airhead and reconnaissance and security line which it is to seize and defend. Normally, each combat team is assigned primary objectives and defensive objectives. However, one or more combat teams may be entirely committed to blocking dangerous routes of enemy approach, or one or more may be committed to capturing

an extensive or heavily defended objective. The combat team furnishing the division reserve is given a smaller sector or fewer objectives so that it is not overextended. The standing operating procedure organization for combat or aircraft allocations may be altered in order to adjust the combat teams to their missions.

(4) Once the combat teams have been assigned their tasks, an assembly area for the division reserve is located either centrally or close to the probable area of commitment. Initial locations for division troops are selected where the terrain and road net facilitate their functioning.

(5) Temporary boundaries may be used initially to facilitate the assault, changing to other boundaries during the defensive phase.

d. Landing Plan.

(1) Army and troop carrier commanders make an over-all allotment of supporting troop carrier units based on the mission, forces required, and general landing areas selected.

(2) Division and supporting troop carrier commanders study assigned landing areas to select and agree on specific drop and landing zones, airstrips and airfields. In formulating the division tactical plan, the sequence and exact place for landing of all units is established in the following manner:

(*a*) Concurrently with the development of the tactical plan, troop carrier A2 and the division G2 select all usable drop and landing zones in or near the airhead.

(*b*) Based on this information, the division G3 decides what drop and landing zones will be used by each unit of the division and the order in which these units will land. Troop carrier command maintains close touch with this process.

(*c*) If a combat team does not have enough drop or landing zones, boundaries may be shifted or the unit may be permitted to land in the area of another unit.

(*d*) Priority or order of landing is applicable only within the parachute and assault aircraft elements. Except under very exceptional circumstances the entire parachute element (both normal personnel loads and heavy equipment drops) is delivered followed by the entire assault aircraft element.

e. Selection of Landing Areas. The nature and location of landing areas are important considerations in formulating the scheme of maneuver. The general area in which they are to be established is necessarily governed by the mission. On the higher command levels landing areas may be assigned in broad general terms. In lower units more specific designation of their locations is required. Their actual sites, as finally selected, are dependent to a large extent upon the number, type, and relative position of the drop zones, landing zones, and airstrips or airfields. Landing areas must provide initial disposition of troops favorable to the attack and must be of sufficient size to accommodate the landing forces. As a guide, a battalion of parachutists can land on a field 1,700 yards square. Assault aircraft can land at the rate of 15 to 20 per minute per air column, but the size of landing zones required is dependent on obstacles on the final approach line and on landing characteristics of the aircraft.

(1) Desirable characteristics of drop zones and landing zones are—

(*a*) Ease of identification from the air under expected conditions of visibility.
(*b*) A straight approach by aircraft.
(*c*) Close proximity to ground objectives.
(*d*) Cover and concealment in close proximity to landing areas.
(*e*) Relative freedom from antiairborne obstacles and antiaircraft defenses.
(*f*) Close proximity to dominating terrain, covered routes of approach to objectives, good road nets, and terrain favorable for defense against armored attack.
(*g*) Capability of being mutually supporting.

(2) Desirable characteristics of airstrips and airfields are—

(*a*) Runways of sufficient length and strength to accommodate the type of aircraft to be landed.
(*b*) Parking and dispersal areas of such size as to accommodate anticipated forces and matériel to be landed.
(*c*) A road net capable of handling all traffic to and from the field.
(*d*) A suitable bivouac area for the operational personnel at the field.
(*e*) An area in close proximity suitable for assembling troops on arrival.
(*f*) Adequate areas and facilities for supply and evacuation establishments when required.
(*g*) Clear air approaches to runway.

f. Air-Movement Plan.

(1) The air-movement plan involves the loading of units into parachute and assault aircraft serials of 15 to 60 airplanes based on the initial decisions reached in the landing plan. The work sheet in appendix XII is an invaluable aid and explains the process briefly.

(2) All parachute (or assault aircraft) elements landing on the same drop zone or landing zone are divided into serials. It is desirable to avoid the splitting of battalions or companies between two serials. Serials are assigned to take-off airfields so that combat teams will be on the same or on neighboring airfields during the briefing period. Troop carrier units, on the other hand, attempt to keep all aircraft of each group on their home airfield, or if that is not practicable to restrict transfers between groups to complete squadrons. Obviously, compromises between troop carrier and airborne units will be necessary.

(3) The air-movement plan is completed by transferring data on the work sheets to an air-movement table.

g. Marshalling. See paragraph 37 for details.

h. The Airhead.

(1) In an airborne operation the airhead is the area in hostile or threatened territory which has been seized by the airborne assault force. The airhead consists of the entire area under control of the airborne force. It must contain adequate space to insure contemplated landing of troops, supplies, and matériel and to protect critical installations. It includes the specific objectives, landing area, airstrips, and airfields that are available or to be constructed. The principal factors which determine the location, extent, and form of an airhead are—

(*a*) The mission of the entire force.

(*b*) Specific objectives to be seized.

(*c*) Landing areas available.

(*d*) Size and organization of forces involved.

(*e*) Offensive and defensive characteristics or capabilities of the terrain.

(*f*) Time available for organization of ground.

(*g*) Expected time of link-up or reinforcement.

(*h*) Enemy capabilities and expected enemy reaction.

(2) Since an enemy counterattack against an airhead may be launched from any direction, the airborne force responsi-

ble for maintaining the airhead must assume dispositions for all all-around defense.

(3) The scheme of maneuver for seizing and defending an airhead is prescribed by assigning missions to subordinate units and by selecting objectives, phase lines, and boundaries.

(4) Normally, the operation map or overlay shows a reconnaissance and security line, an airhead line, and necessary additional objectives or phase lines. These lines may vary in location as the operation develops. The airhead line marks the outer limits of the area which is to be denied to the enemy by employing the principles of mobile defense.

(5) The reconnaissance and security line is located forward of the airhead line. It is established immediately on landing in order to afford security to the airborne force during the critical landing and reorganization period. Whenever possible, the reconnaissance and security line is located on dominant terrain which gives observation of likely enemy avenues of approach and it is normally located within supporting range of artillery within the airhead. It is composed of a series of observation posts and road blocks which may or may not be mutually supporting. In the early stages of an airborne operation it performs the same type mission as a screening force and in the later stages, when assault missions have been accomplished and the airhead is relatively secure, it performs generally the same function as does the outpost line of resistance in a conventional defense. In large operations where light armored units or special highly mobile units are attached, the reconnaissance and security line may be located at a greater distance in advance of the airhead line.

i. Scheme of Maneuver. The general scheme of maneuver after landing is based upon normal considerations governing the conduct of ground operations but is modified by the special conditions which develop from dispersed landings and lack of initial command control. Special consideration must be given to time and place at which the assault and reserve elements are landed; consolidation and reorganization of the assault forces; and capabilities of the airhead organization to continue fire and logistical support.

j. Assembly. Plans for use of all available assembly aids must be made. Once landed, speed in obtaining equipment and reorganizing troops into their combat organization is of paramount importance. The speed of assembly of air-landed troops exceeds that of

parachutists if the former are transported in small complete tactical units. Units having immediate specific missions should proceed on those missions without waiting for assembly of entire units.

k. Regaining of Command Control. The dispersion of troops during landing requires that the initial effort of all commanders and staff officers be devoted to regaining the command control necessary for effective direction of the assault force. This requires plans for adequate briefing, predetermined location of command posts, and rapid establishment of communication.

l. Alternate Plans. Alternate plans which will accomplish the mission should be prepared. They should provide for such contingencies as failure of any part of the assault force to attain all objectives and changes in weather conditions which may interfere with the landings. A means must be provided for communicating to subordinate units the decision to execute an alternate plan.

m. Reserves. Reserves are normally located in the airhead. Under special conditions they may be held at departure bases ready for commitment. Lack of suitable airfields in the airhead may require planning to retain some combat elements in departure bases for use as reserves.

n. Timing of Operation.

(1) In selecting the hour of landing, consideration is given to the enemy situation and capabilities, the influence of predicted weather, visibility as affected by daylight and darkness, and plan of cooperating or supported forces.

(2) Daylight permits better air support and better visibility both from the air and from the ground. Operations can, therefore, normally be executed more accurately in daylight.

(3) The principal advantages of landing at night are that darkness aids tactical surprise and reduces the effectiveness of the defender's fire. Its disadvantages are the increased dispersion on landing, with consequent difficulties of assembling troops, and the decrease in effectiveness of close air support.

(4) Before resorting to a night landing, consideration should be given to the use of smoke in conjunction with a daylight landing.

o. Air-landed Operations. When required, plans are developed to bring in air-landed troops and matériel after the seizure of an airhead and the construction or capture of suitable airfields. These troops may include infantry divisions, corps and army troops, and service elements to support them.

27. AIR SUPPORT PLAN

a. The air support plan is based on the over-all Air Force mission and the amount of strategic, tactical, and troop carrier air effort available.

b. The detailed air plan is based on the following:

(1) Required degree of air superiority, and extent of the area(s) over which it must be maintained.

(2) Battle area(s) to be isolated.

(3) Extent of visual, electronic, and photo reconnaissance required.

(4) Requirements for air defense of departure areas, air cover of serials, air neutralization of assault area, and close support of ground forces in the objective area.

(5) Particular emphasis is given to tactical air control parties, troop carrier combat control teams, and advanced landing field parties.

(6) Plan for air transportation and air supply.

(7) Requirements for air security, that is, premeditated employment of air power, prior to attack, to prevent disclosure of intent.

(8) Air deception plan or diversionary measures during attack.

(9) Effect of forecasted weather on the proposed operation and alternate plan(s) of action.

(10) Effect of enemy ground antiaircraft defenses.

c. The air plans should include provisions for—

(1) Visual reconnaissance to locate and report hostile movement into, within, and away from the airhead; and to adjust long-range artillery.

(2) Photo reconnaissance for intelligence purposes and tactical air operations.

(3) Elements of the strategic air command may be employed when the theater commander deems it advisable and the Joint Chiefs of Staff concur.

(4) Close support missions.

(5) Armed reconnaissance.

(6) Column cover.

(7) Air defense of the airhead day and night (including denial of the air to enemy artillery observation planes).

d. When the distance from rear air bases to the proposed airhead is great, consideration should be given to the early establish-

ment of fighter and reconnaissance aircraft in the airhead for the purpose of accomplishing the missions listed in *c* above.

28. TROOP CARRIER PLANNING FOR AIR MOVEMENT

a. For general responsibilities of the troop carrier commander for planning, see appendix VII. Upon designation of the general landing area(s), troop carrier staffs will initiate planning for an air movement. The troop carrier commander's plan for the air movement should prescribe the use and allocation of troop carrier units and facilities as favorable to the requirements of the airborne commander as technical and tactical limitations permit. Backward planning from the landing area is the best approach to the problem. Final approach route(s) and air traffic in the target area, route over enemy and friendly territory, serial formation assembly, air traffic, and concentration for the air movement are considered in that order. Plans are made for each based upon the following considerations:

(1) Estimate of enemy air and ground dispositions which can be avoided or neutralized.
(2) Enemy capabilities.
(3) Distinctive terrain features for use as aids to navigation, or control, or both, and coordination points.
(4) Conformation of suitable landing areas and location of terrain obstacles.
(5) Anticipated weather.
(6) Concept of air traffic density as it may be affected by a day or night operation.
(7) Other terrain features which affect ground observation and ground fire. Centers of population, main roads, proximity to interceptor airfields, radar and air warning system, antiaircraft defense system, thinly held front-line areas and time and distance in enemy territory are all considered for effect on the air movement and routes. Friendly land and naval forces are also considered.

b. The air route selected should be as short as practicable, delay alerting the enemy air defense system, take advantage of terrain features for navigation and control points, establish a free air-passage corridor over naval forces, where required, and minimize conflict with other theater air traffic.

c. The take-off and formation assembly of group serials into division, air force, and troop carrier command columns resemble the tributaries of a river. They involve a detailed air traffic analysis which will indicate, if not dictate, the sequence of take-off of

serial components. At this point, the air-movement plan and the ground commander's landing priorities can be coordinated to form the basis for the marshalling plan and air-movement table. The plan is checked for accuracy, timing, effective operating radius, and payload before being approved for coordination with other air, land, and naval agencies. The partially completed plan is coordinated with other theater agencies such as strategic and tactical air commands, air defense command, Air-Sea Rescue Service, Navy, and senior Army headquarters. Final details for emergency procedure, recognition signals, and the siting of electronic and visual navigation aids are then added to complete the air-movement plan.

29. INTELLIGENCE PLANNING

a. Intelligence planning for the collection of information and for producing and disseminating intelligence of the objective area is concurrent with and integrated with the planning of other staff sections. It begins as soon as the objective area is assigned and is a continuous operation.

b. (1) When the operational mission is announced, G2 will normally receive from higher headquarters all available intelligence pertinent to the enemy situation and characteristics of the area of operations. This must be made available to other staff planners at the earliest possible moment, in order to enable them to proceed with their planning. To this end, G2, as soon as possible, prepares a preliminary estimate based on immediately available intelligence. Deficiencies in this estimate will be apparent and plans must be made at once to produce the additional intelligence necessary for effective planning. In addition, the G2 must prepare the necessary detailed intelligence studies to enable the troops to understand the enemy situation and to produce their own plans. These functions require that G2 prepare or procure all or some of the following:

(*a*) A collection plan.
(*b*) Intelligence estimates.
(*c*) Tactical study of the weather and terrain.
(*d*) Landing area intelligence study.
(*e*) Order of battle studies.
(*f*) Enemy airfield summary.
(*g*) Defense overprints.
(*h*) Charts, maps, models of the objective area.

(*i*) Air photos.
(*j*) Photo interpretation summaries.
(*k*) Counterintelligence plan.
(*l*) Censorship instructions.
(*m*) Instructions regarding deceptive measures.
(*n*) Weather service plan.

(2) Information contained in the above plans and studies is published in the intelligence annex to the operation order. However, some or all of the studies may and should be published separately for earliest possible dissemination to the combat troops.

c. To insure that the plan for the collection of information is complete, the G2 must prepare a collection plan similar to the one described in FM 30–5. The only item peculiar to airborne operations in the preparation of this plan is the almost complete dependence of airborne units on higher headquarters for information and intelligence.

d. The preparation of the intelligence estimate is a continuing function and differs in no way from the task confronting units planning for other types of operation.

e. The preparation of tactical studies of the weather and terrain assumes added importance in airborne operations. The limits of the airhead, the size of the assault echelon, and the assignments of missions to subordinate units will, in some measure, be determined by the terrain and the effect of various weather conditions. These studies are normally disseminated as an appendix to the intelligence annex.

f. (1) The landing area intelligence study is peculiar to an airborne unit. After the army announces location of general landing areas, the corps G2, in conjunction with the intelligence officers of divisions and troop carrier units involved in the operation, makes an intensive study of the landing areas based on photo cover. This study is continued until the last possible moment prior to H-hour and is furnished the combat troops in the form of annotated mosaics, overlays, or written summaries. For each area the study should include the following:

(*a*) Location and landmarks.
(*b*) Size and shape of landing areas including maximum absorption of assault aircraft and parachutists.
(*c*) Terrain, including location of assembly areas and cover.
(*d*) Obstructions—natural and artificial.

(*e*) Location of enemy defenses and troops capable of interfering with landings.

(2) The above intelligence should be disseminated separately when required for planning by the combat units and should be amended when changes are indicated as a result of photo interpretation or other information.

g Order of battle studies are similar to those for any type combat unit. However, because of the extreme vulnerability of airborne units to armored attack, the location of all known enemy armored formations must be ascertained. The disposition of all uncommitted enemy forces is determined, in order to insure that the enemy cannot bring overwhelming forces to bear on the objective area before the airhead has been established or before ground link-up has been effected.

h. Enemy airfield summary includes information regarding the number, condition, capacity, and description of all enemy airfields in the objective area. It also includes description of possible sites for construction of airstrips and airfields in sufficient detail to guide engineer planning. It may be issued as a separate study but is normally published as an appendix to the intelligence annex.

i. Defense overprints are not peculiar to airborne operations but are of particular importance to them. They are kept up to date by photo interpretation reports. Their distribution is described in paragraph 5 of the intelligence annex (maps and photographs).

j. Discussion in *i*, above, regarding defense overprints, applies to maps, charts, and models.

k. Air photos are the major source of information. As a result, special emphasis is placed in planning on their procurement. Their distribution is described in paragraph 5 of the intelligence annex.

l. The preparation of the other paragraphs of the intelligence annex (summary of enemy situation; measures for handling prisoners, captured documents, and matériel; and distribution) are the same as for normal ground operations. (See intelligence annex example—app. XVII.)

m. Deceptive measures will be executed in accordance with directives from theater headquarters. Such measures are designed to deceive the enemy as to the actual destination, the time of the assault, and the friendly order of battle.

n. (1) The dependence of airborne operations on proper weather conditions make it essential to prepare a detailed plan for obtaining weather information. The theater or joint airborne force weather service plan should include the following:

(*a*) Provisions for a weather central at the highest tactical headquarters involved in the operation.

(*b*) Instructions for aerial weather reconnaissance of all areas that may affect the mission.

(*c*) Instructions for naval weather reporting from all adjacent sea areas.

(*d*) Instructions for obtaining weather reports from all air weather service detachments in areas that may affect the mission.

(*e*) Communication instructions for the dissemination and collection of all required weather information.

(*f*) Instructions for the establishment of weather service in the objective area.

(2) Army units involved in airborne operations publish only that weather information which affects their own task. This information is normally published as an appendix to the intelligence annex.

o. As in any type operation, intelligence planning conducted during the operational phase must provide for the collection and reporting of necessary information and the dissemination of intelligence produced from this information. Existing intelligence must be revised continuously as new intelligence is developed. Essential elements of information and the collection plan are altered as the situation develops so as to reflect current intelligence needs. Airborne units are initially dependent upon higher headquarters for the bulk of the intelligence required. This is because of their comparative unfamiliarity with the terrain and the enemy situation. This condition is alleviated to some degree in the later stages of the operation by the fact that airborne operations normally become defensive in nature after the seizure of the objective and an opportunity is offered to become completely familiar with the terrain and the enemy situation.

30. COUNTERINTELLIGENCE PLAN

a. General.

(1) The security problems of airborne operations are complicated by the fact that airborne units are fewer in number than other types of units. For this reason they are more easily followed by enemy agents. The massing of cargo aircraft, movements to airfields, and associated marshalling activities are also rather easily detected. The security of these activities becomes even more important with the enemy capability of the tactical use of

atomic weapons. There are, however, certain factors which tend to counterbalance these difficulties, namely, the extreme mobility of airborne troops and the fact that units are normally located some distance to the rear, this necessitates penetration by enemy aircraft or use of agents with long-range communication to obtain information on the marshalling or location of our forces.

(2) The fundamental purpose of security regulations is to deny to the enemy all information relating to the date, time, and place of the airborne operation and the strength, disposition, tactics, and equipment of the troops employed. Since the success of the majority of airborne operations depends on attaining surprise, it is essential that security surrounds all operations.

(3) Security is a responsibility of all ground, air, and communications zone commanders.

(4) Security instructions, including those on censorship, are usually so detailed that they are published as an appendix to the intelligence annex.

b. Security During the Planning Phase.

(1) Vital information concerning the pending operation should be disseminated only to those who absolutely need it for completion of their work. To this end, a table is generally prepared indicating at what date various echelons of command may receive certain portions of the operation plan.

(2) All actual work on the operation should be done in a war room which is thoroughly secure. All maps, charts, tables, and documents should be kept in the war room. When the appropriate time arrives for lower echelons to receive planning information, similar secure installations should be prepared and operated by these echelons under the direction of unit intelligence officers. A special pass system should be initiated for the planning phase for all those whose official duties require them to have access to the planning rooms.

(3) Complete unit censorship should be effected prior to movement to the marshalling areas. Unit identification, vehicle markings, and distinctive items of uniform may be removed, covered, or changed when considered necessary.

(4) No civilian or unauthorized military personnel should be allowed in the headquarters, training areas, troop bivouacs, or other installations except upon specific authority

of the intelligence officers. Accredited war correspondents, photographers, and Red Cross personnel should be treated as military personnel, once they have been officially recognized and approved by G2.

(5) The Counter Intelligence Corps should be required to assist in the control of civilians in and about troop areas and should initiate activities to provide a check on the effectiveness of the security measures in the base camp and in the surrounding areas.

(6) Leaves are normally concluded by a specific date before the operation. The resulting disappearance of airborne personnel from recreational centers may cause a breach of security and requires special measures to prevent conclusion that an operation is pending.

c. Security During the Marshalling Phase.

(1) During this phase the enemy has the greatest opportunity to determine intentions of the airborne force. Therefore, the most stringent of security measures must be effected.

(2) Prior to departure for the marshalling areas the Counter Intelligence Corps detachments should make a security check of all marshalling areas. They should conduct a further security check of the base camp after the departure of troops for the marshalling areas.

(3) Time of movements to any location of the marshalling areas should not be revealed to any person except those who require the knowledge in the performance of military duty. Departure to the marshalling areas in hours of darkness is desirable if practical.

(4) All personal papers, and items bearing unit identifications should be collected from individuals prior to takeoff. All mail written during the last few days in the base camp and in the marshalling areas should be collected and held until the operation has been announced by higher headquarters—normally after the airborne force has landed in the objective area.

(5) When troops are sealed into the marshalling areas, departure therefrom or communication with unauthorized military or civilian personnel is prohibited. A special pass system should be prescribed for those whose official duties require them to leave the marshalling area.

(6) All personnel sent to hospitals after departure from base camps and prior to commitment to action should be in-

formed regarding security precautions. They should be isolated from all other patients until the operation is officially announced.

(7) Briefing of troops should be initiated at the latest practical moment and should not begin until troops are sealed in the marshalling area. Guarded huts, tents, or buildings within the marshalling area should be used for briefing. Care should be exercised to keep briefing aids from personnel not authorized to see them.

(8) Only official messages are received or dispatched after arrival in the marshalling areas. Communication systems are monitored to insure compliance with this directive.

d. Security During Air Movement and After Arrival in Airhead. Orders, marked maps, overlays, or other intelligence or operational material should not be carried in the air echelon except as authorized by higher headquarters and then some means must be provided for their instantaneous destruction should the necessity arise. After arrival in the airhead, the problems of security are substantially the same as those for normal ground operations, but the G2 is expected to maintain security with limited personnel and equipment and over areas much larger or more widely dispersed than are usually encountered in ground operations.

31. SIGNAL COMMUNICATION PLAN

a. Joint signal plans must be prepared in order that communication facilities of each component of the force may be integrated and coordinated. Joint plans for signal communication are necessary with—

(1) The troop carrier units.

(2) Naval, air force, and artillery units providing fire support.

(3) The command which retains control until contact is made with advancing ground forces.

(4) The commander of advancing ground forces.

(5) Friendly advancing units with whom contact is expected in the airhead.

b. Signal plans for airborne forces should include the following insofar as they may be appropriate:

(1) Procurement of additional personnel required for special installations.

(2) Preparation of standing operating procedures and signal operation instructions.

(3) Headquarters communication and communication to subordinate, adjacent, higher, and other interested headquarters.
(4) Allocation of frequencies, channels, codes, and ciphers not covered in signal operation instructions.
(5) Instructions to subordinate communication officers concerning proposed signal communication responsibilities.
(6) Coordination measures with higher and other headquarters.
(7) Distribution of plans and orders for all units in the marshalling area.
(8) Communication intelligence and communication security.
(9) Use of joint and special cryptographic aids.
(10) Signal personnel and equipment to go into the airhead, by teams and air serials, for each tactical plan.
(11) Signal equipment and supplies to be landed by aircraft and the sequence of their delivery to include extra equipment to replace losses expected in the assault.
(12) Elements of signal units, if any, which are to remain at the departure areas to aid in the movement of signal supplies and equipment.
(13) Location of the division rear echelon in the airhead, or at departure area, and the signal personnel required.
(14) The installation and operation of air support request communication channels.
(15) Provision of public information signal communication facilities.
(16) In addition to provisions for the standard ground communication system, airborne signal plans must provide for pathfinder units, small unit assembly in the forward area, contact nets, and communication to and within base elements which remain in the departure area.

32. PLANS FOR CONSOLIDATION AND BUILD-UP OF TROOPS AND MATÉRIEL

a. After assault units have seized their objectives and accomplished initial missions, a transition to the defensive is usually necessary. Units must effect a change in passing from an attack on the initial objectives to a perimeter defense formation. This change of front can be effected if the plan of the airhead commander includes selection of an airhead line and prescribes boundaries between units.

b. Phase lines may be designated as the D-day-, or D + 1- or D + 2-day, line. They should be placed on the best defensive terrain which the commander feels he can seize by a particular day.

c. The conduct of the defense of the airhead is usually delegated to the commander of the assault force. In preparation for this defense, the commander plans to phase in troops and supplies, to reinforce his artillery, to furnish an integrated antitank defense, to reinforce his reconnaissance and security units, and to supplement his antiaircraft defense. The plan must be flexible to permit changes as the tactical situation varies.

d. The plan for building up troops and supplies in the airhead must support the over-all size and mission of the airborne force. The plan, after coordination and adjustment, is translated into an air-movement plan. Some major factors to be considered in the build-up plan are—

(1) Airfield construction.
(2) Development of a system for the reception of troops and matériel.
(3) Concentration of units for further operations.
(4) Installation of logistical facilities on a scale to support contemplated operations.

33. PLANS FOR EXPLOITATION

The exploitation phase insures the fulfillment of the operational mission. Plans for successful exploitation may include—

a. Enlarging the airhead as an advanced air-base, naval base, port, or missile site.

b. Denying the enemy use of critical terrain, road and rail nets, canals, natural resources, and potential allies.

c. Destruction or capture of manufacturing areas, resources, missile sites, airfields, or enemy forces.

d. Seizing terrain inaccessible to other type ground troops.

34. PLANS FOR CONTACT WITH ADVANCING FRIENDLY FORCES

a. If the initial contact is with naval forces, at a port or shore line, plans should be made for eliminating enemy opposition, coordinating naval gunfire and air support, and signalling safe entry to waterborne units.

b. If an inland contact with advancing ground forces is contemplated, plans must be made for coordinated use of air and artillery support. Requirements are—

(1) Prearranged plans for juncture and assumption of command by senior headquarters.
(2) Command and staff liaison.
(3) A system of mutual recognition and identification prescribed in signal operation instructions.
(4) Early radio contact to establish front-line positions, fire coordination line and bomb safety lines.
(5) Maximum use of available army aircraft to describe positions and to assist in making final link-up.

35. PLANNING BY UNITS LOWER THAN DIVISION

a. Subject to the security restrictions placed on the operation, the planning of subordinate units proceeds concurrently with that of higher units. Units lower than battalions complete planning on supply, air movement, and matters other than tactics without complete knowledge of the tactical plan.

b. Regimental commanders participate in division planning. They advise the division commander as to any recommended changes in drop zones, landing zones, boundaries, and objectives, and submit requests for special weapons and equipment needed. Once the division plan is fixed, lower units prepare detailed tactical plans which assign assembly areas, objectives, and sectors to their lower units.

c. Planning for air movement in lower units involves preparation of flight forms shown in appendix XIII. The assignment of subordinate units and personnel to departure airfields is made in accordance with the unit tactical plan and in conformity with available air transport as prescribed in the air movement table. This will insure that the proper unit arrives at its assigned location in the airhead at the scheduled time to accomplish its mission. Plans for assignment of personnel to departure fields must, also, give consideration to the problem of unit briefing, communication security, control, and supply. Subordinate unit commanders make the final detailed adjustment of units or individuals to accomplish these essentials.

Section III. ADMINISTRATIVE PLANNING

36. GENERAL

Continuous collection and compilation of administrative planning data are essential. Proper planning is initiated to obtain such pertinent facts as are available and to modify and supple-

ment them continuously. All commanders and staff sections perform functions as outlined in FM's 100–10 and 101–5, and, in addition, solve the various problems which are injected by technical requirements.

37. MARSHALLING

a. Marshalling includes four principal and related activities. These are—

(1) The establishment of required number of marshalling camps, and the provision of necessary facilities and services at these camps.
(2) The allocation of tactical units to marshalling camps.
(3) The movement of tactical units to marshalling camps.
(4) Plans for locating and loading aircraft on departure airfields.

b. When theater plans for airborne operations are developed, communications zone establishes marshalling camps based on the maximum number of assault airborne forces to be mounted simultaneously and on troop carrier dispositions on departure airfields. In theaters in which many airborne operations are contemplated, communications zone establishes marshalling camps which are so sited that they may be utilized in mounting several operations. The locations of these camps are then a factor to be considered by the airborne G3 in his planning. G3 coordinates closely with G2 on deception and security measures to insure secrecy. As soon as the airborne G3 has completed the air movement table (airborne assault echelon), he informs the G4 as to the units, personnel, and vehicles to be transported from each departure airfield, and the dates on which they should arrive and depart from these airfields. Additional information, such as the location of headquarters, which require additional signal communication facilities is included. Thereafter the G4 is the general staff officer who has primary interest in developing and supervising the marshalling process. He arranges with communications zone for the final preparation of facilities and services at each marshalling camp; prepares movement tables for the movement of tactical units and accompanying supplies to the designated marshalling camps; and coordinates with communications zone for the supply of airborne units, and for evacuation and hospitalization of sick and wounded while at the camps.

c. Because of his primary interest in the marshalling process, the airborne G4 is normally the coordinating general staff officer for all plans affecting marshalling.

d. The preparation of standing operating procedures for marshalling and rehearsals are essential to smooth execution of plans made for marshalling. For details of the marshalling process see chapter 3.

38. LOGISTICAL PLAN—GENERAL

a. Planning Information. Preliminary data needed to prepare the logistical plan include—

(1) Troop lists and strength reports.
(2) Station lists.
(3) Casualty rate tables.
(4) Location and capacities of departure airfields.
(5) Location and capacities of possible landing areas with particular attention to airfields.
(6) Number and type of aircraft available at any stated time.
(7) Typical loading plans for division, corps, and army troops.
(8) Typical supply loadings.
(9) Supply levels required.
(10) Supply levels available within the theater.
(11) Logistical support required by participating air forces.
(12) Equipment status reports.

b. Logistical Responsibilities for Planning.

(1) *Airborne forces responsibilities.*
   (*a*) Concentration, organization, and equipping of the airborne forces.
   (*b*) Loading troops, accompanying supplies and equipment.
   (*c*) Recovery of air-dropped supplies and equipment and the provision of service units for the unloading of aircraft in the airhead.
   (*d*) Movement of supplies from landing fields to airhead supply points by airhead supply units.
   (*e*) Operation of airhead supply points.
   (*f*) Logistical operations within the perimeter of the airhead by normal logistical agencies.
   (*g*) Repair on construction of the required airfields within the airhead until ground link-up.
   (*h*) Evacuation to airhead airfields.

(2) *Communications zone responsibilities.*
   (*a*) Receipt, procurement, and delivery of equipment and supplies to rear air bases for transporting to the airhead.

(*b*) Movement of airborne forces to the marshalling camps and the provision of accompanying equipment and supplies.

(*c*) Evacuation from rear air bases.

(*d*) Operation of marshalling camps.

(3) *Aerial ports responsibilities.*

(*a*) Performance of all army duties incident to the loading and lashing of equipment and supplies not specifically concerned with the operation and maintenance of aircraft, except that airborne forces are responsible for loading supplies, weapons, vehicles, and equipment to accompany troops, assisted by the aerial port.

(*b*) Receipt, unloading, and temporary storage of supplies at rear air bases.

(*c*) Packaging and loading of supplies for delivery to the airhead.

(*d*) Procurement of aerial delivery containers and cargo parachutes.

Note. If aerial ports are assigned to communications zone, planning to meet the above responsibilities is a responsibility of communication zone.

(4) *Air Force responsibilities.*

(*a*) Air movement of troops, equipment and supplies to landing areas within an airhead. (Within the air forces most of these are operational considerations.)

(*b*) Assistance in the logistical organization for the receipt of supplies on airfields in the airhead.

(*c*) Evacuation from airfields in the airhead.

(*d*) Construction, rehabilitation, and maintenance of airfields in the airhead after ground link-up.

(*e*) Logistical support of Air Force units except items of common supply.

(*f*) Supervision of loading and lashing operations at the rear air bases for flying safety responsibility only.

c. Basic Decisions Required.

(1) In order that the preparation of a logistical plan may progress, certain basic decisions are made as early as possible. This enables the responsible services to prepare and execute plans for procurement and assembly of aircraft, supplies, equipment, and personnel. These decisions include—

(*a*) Forces involved, their organization, and the principal objectives to be attained.

(*b*) Tentative strength and composition of logistical units in the airborne force.
(*c*) Scale of equipment to accompany the airborne force.
(*d*) Initial supplies to be taken.
(*e*) Level of supplies to be maintained in airhead.
(*f*) Selection of airfields for the landing of troops and supplies.
(*g*) Location of marshalling camps and determination of the troops and matériel to be marshalled at each camp.
(*h*) Estimated duration of airhead organization required in the landing areas.
(*i*) Organization and method of movement for follow-up echelons of major units of the airborne force.
(*j*) Location of rear air bases to be used for supply purposes.
(*k*) Allocation of available aircraft for troops and supply.
(*l*) Date on which airborne forces must be ready for embarkation by aircraft.
(*m*) Capacity of *intransit* areas to be maintained at advance air bases to facilitate supply.
(*n*) Evacuation policies.

(2) Detailed logistical plans may be prepared, based on the decisions outlined above. In addition, the following considerations will affect the plan:
(*a*) Facilities required for the staging of troops at marshalling camps.
(*b*) Supplies in desired quantities delivered to rear air bases at the proper time.
(*c*) The number, size, type, and loading characteristics of aircraft available.
(*d*) Materials handling equipment.
(*e*) Distance between rear air bases and landing areas.
(*f*) Characteristics of the proposed airhead, including road net, storage, and other facilities.
(*g*) Duration of follow-up supply phase before normal supply procedures can be established. This includes the time required to construct, repair, or capture airfields.
(*h*) Estimate of supplies, equipment, and materials within the proposed airhead for possible exploitation.
(*i*) Climate and season of the year.

39. LOGISTICAL PLAN—DEVELOPMENT

a. General. Logistical plans of an army, corps, or division, vary

in scope, coverage, and sequence in planning. The logistical plans of all commands encompass supply, evacuation, and hospitalization, transportation, service, and management.

b. *Supply.*

(1) *Phases of supply.* Supplies of all classes are divided into three phases in order to facilitate delivery and insure adequate and continuous supply for an operation. The phases of supply are classed as assault supply, follow-up supply, and maintenance and build-up supply.

(*a*) Assault supplies are those supplies of all classes which accompany the assault elements of airborne units into the objective area. Such supplies are carried as follows:

1. Unit prescribed load. On individuals, in aerial delivery containers, in unit vehicles of the airborne assault echelon, and by service elements of division, corps, and armies.

2. Additional supplies. In vehicles of service elements and in bulk-loaded assault cargo aircraft. Assault supplies are issued to units prior to movement to marshalling camps.

(*b*) Follow-up supply consists of supply delivered direct to assault airborne forces or to any unit which becomes isolated because of enemy action or weather. Delivery is made by powered cargo aircraft, parachute, or free fall (*b*(5) below). Normally, follow-up supply is packaged to correspond to anticipated daily requirements. Provision must be made which will permit flexibility in composition of daily requirements. Follow-up supply will be discontinued as soon as practicable. There are three categories of follow-up supply:

1. Automatic. Scheduled amounts of follow-up supply are planned for delivery to assault airborne units within 48 hours after the assault landings have been made. The number of days of scheduled follow-up supply will depend on the specific situation and should be sufficient to enable the airborne forces to continue their operations until maintenance supply is available.

2. On call. Normally, 2 or 3 days of follow-up supply is prepared for delivery to all units employed in the airhead but will not be delivered except on call of a requesting unit. Whenever any of the on-call fol-

low-up supply is used, the expended amounts are reconstituted.

3. *Emergency.* Provisions are made for delivery of supplies to meet unforeseen circumstances. These supplies are requested by forces in the airhead by item.

(*c*) Maintenance and build-up supplies consist of those supplies brought into the airhead for distribution by normal supply procedures. These include the moving of the supplies in bulk to supply points in the airhead or, for later phases, the maintenance area. By shipping in bulk, maximum efficiency in utilization of lift and service support permits the rapid build-up of reserve stocks with the minimum number of planes. Distribution to units is effected by the logistical organization in the objective area. When practical, bulk supplies may be delivered directly to the using unit in the airhead by air from the rear bases.

(2) *Quantity of supplies.* The quantity of supplies carried by the assault airborne forces is dependent on the initial combat requirements, the carrying capacity of the aircraft used, the availability of aircraft for parachute, free fall, or air-landed supply, and the projected date of link-up. Overland follow-up forces normally carry supplies for the entire division to insure operations until supplies are available through normal channels. All air-landed forces which arrive in an airhead after air-landing of maintenance and build-up supplies has started, need carry only prescribed or basic loads.

(3) *Special equipment and supplies.* Airborne operations normally necessitate some changes and additions to standard equipment and basic loads of all units. The decision on what is to be taken will be based on operational requirements and available cargo space. Substitution of smaller equipment such as the ¾-ton truck for the 2½-ton truck may be necessary. Certain vehicles are equipped with cargo lifting devices to facilitate initial unloading of aircraft. Pallets and matériel handling equipment may expedite the handling of cargo in the more advanced supply phases.

(4) *Type of loading.*

(*a*) All assault airborne forces are combat loaded so the equipment and supplies essential to initiation of combat are readily accessible on landing.

(*b*) Supplies are dispersed by distribution among aircraft

transporting a unit to insure that all units are self-sustaining on landing.

(*c*) Follow-up supply to assault airborne forces is dispersed among aircraft delivering the supply to offset losses of one type of item should the aircraft be lost en route.

(*d*) When maintenance or build-up supply by air is in effect, supplies are segregated and loaded by classes of supply to facilitate unloading at landing fields.

(5) *Methods of delivery.* There are three methods of delivering supplies by air. Supplies may be landed by cargo airplane, dropped with parachute, and dropped free fall.

(*a*) Landing supplies by cargo airplane is the most efficient of these methods of air supply. Airplanes are capable of landing larger loads than they can deliver by parachute or free fall and the landing airplane may be used for evacuation purposes on leaving the airhead. This method is dependent on the availability of airstrips in the airhead capable of taking the type airplane being used for supply; it also entails the use of additional service troops and equipment for unloading purposes.

(*b*) Dropping supplies by parachutes, in aerial delivery containers, is the most economical method of supply when airplanes cannot land. This method entails the use of a large amount of delivery equipment and a large number of specially trained personnel. This method is used most frequently to supply assault airborne forces immediately after they have landed or to supply units which are isolated. In some situations enemy action or weather may dictate the use of parachute delivery using heavy drop techniques even though suitable landing strips are available in the airhead.

(*c*) The free fall of supplies is the least efficient method of aerial supply. When facilities for dropping by parachute are not available, this method may be used. There is a saving of delivery equipment but this is offset by the greater loss or damage to the supplies dropped.

(6) *Supply by class.*

(*a*) *Class I.*

1. Assault type rations are carried by assault airborne forces.

2. Combat-type rations are carried by airborne forces other than assault and are used for follow-up supply to assault airborne forces.
3. All types of rations are included in maintenance and build-up supply.
4. Rations are provided for prisoners of war and civilians in the airhead.

(*b*) *Water.*

1. Airborne forces carry filled canteens and water purification tablets.
2. Location of possible water supply points must be predetermined.
3. Organic water containers are carried filled for use both en route and for consumption in the airhead.
4. Water purification units are made available in the airhead as early as practicable.

(*c*) *Class II.*

1. Airborne forces normally carry replacement and maintenance parts for essential items for a period of from 5 to 7 days.
2. Limited amounts of class II items are included in the follow-up supply.
3. Provisions for the replacement of individual clothing and equipment must be included in maintenance supply.

(*d*) *Class III.*

1. All vehicles are enplaned with gasoline tanks filled and crank cases full of oil. Additional filled cans of gasoline, motor oil, and lubricants are carried on each vehicle.
2. Follow-up supply includes gasoline and oil for the number of vehicles transported.
3. Supply of gasoline is in small containers except when facilities in the airhead permit the use of bulk gasoline in large tanks or in dumps.

(*e*) *Class IV.* Since supplies brought into the airhead will be limited because of weight, resources within the airhead are exploited to their fullest extent.

(*f*) *Class V (see FM 101–10 for ammunition supply data for an airborne division).* During the assault phase, careful consideration is given to the fact that ammunition tonnages normally are greater than the combined weight of all other supplies. A prescribed load,

which is feasible to carry, accompanies the units. This amount is specified in a number of rounds per weapon. Follow-up supply to assault airborne forces is normally a specified amount of all types of ammunition but must be sufficient to allow continuity of combat operations. These amounts are based on the type weapons with the airborne forces. Changes in the specified amounts may normally be expected depending on the type of operations and the degree of enemy opposition. Ammunition delivered in follow-up supply should consist of composite loads to offset losses of one type of item when aircraft are lost. Provisions must be made in advance for possible additions or deletions of certain types of ammunition. Expenditure rates can be based only on staff estimates and must take into consideration the following factors:

1. Degree of opposition to be encountered during and after the landing.

2. The number and type of weapons landed with airborne forces.

3. Planned time of follow-up supply.

4. Number and types of aircraft to be used.

(*g*) *Captured and salvage supplies.*

1. Full utilization should be made of captured or abandoned enemy matériel.

2. Logistical considerations require the recovery of all salvable equipment. This applies especially to parachutes and aerial delivery containers.

c. Rear Air Bases. The air force organizes and operates rear air bases to effect the delivery of all required supplies to the objective area. The communications zone commander controls the receipt, storage, and delivery of supplies for the airborne units in conjunction with the air force commander, and performs all duties incident to loading and unloading of supplies at rear air bases including the receipt, storage and issue to the airborne forces. The army determines the over-all supply requirements which are to be delivered to the objective area. The Army coordinates with the Air Force for the movement of supplies to rear air bases.

d. Evacuation and Hospitalization.

(1) *General.* In an airborne operation close behind enemy lines, normal ground evacuation and hospitalization procedures may follow shortly after the ground link-up has been made. In an airborne operation where the airhead is

to be located at great distances behind enemy lines, all evacuation of casualties is by air for an indefinite period. In planning for this type operation, provision must be made for holding a large number of casualties in the airhead. It is normal to locate battalions of medical holding companies at airfields in the airhead, the number to be used depending on the size force and anticipated losses. Evacuation hospitals should be located in the general vicinity of the landing fields. The number to be used also depends on the size force in the objective area, the evacuation policy, and anticipated casualties. During the exploitation phase, evacuation procedures within the airhead comply with those specified in FM 100–10. The communications zone receives casualties at rear bases from the troop carrier command and is responsible for further evacuation to general hospitals.

(2) *Airborne assault phase.*

(*a*) Planning for an airborne operation includes arrangements with the communications zone for medical attention, evacuation, and hospitalization of casualties, both battle and nonbattle, during the time the airborne force is located in marshalling camps.

(*b*) Plans are made for holding casualties in unit medical installations until either ground juncture has been effected or air-landed operations permit air evacuation. In airborne operations close behind enemy lines, plans may be made to use assault aircraft or helicopter evacuation.

(*c*) Initial location of an airborne medical clearing station is generally near the center of the objective area and close to the area on which the medical battalion landed. Full use is made of available buildings. The clearing station is well marked with the Geneva red cross.

(*d*) Evacuation and hospitalization procedures after juncture has been made with other ground units or when the airhead has been expanded sufficiently to permit the establishment of army type medical service, are as specified in FM 100–10.

e. Transportation.

(1) *Air.* The only line of communications into an airhead, established deep within enemy territory, is by air. In order that this line of communication may be operated to its fullest extent, sufficient airfields must be available

both in the rear area and within the airhead. Movement control of troops and matériel over this line of communications must be planned by the joint airborne force commander. Operations and air routing, however, will be planned by the troop carrier commander. Full use should be made of the capabilities of cargo aircraft for landing supplies as close to using units as practicable. During the consolidation phase, the number of airfields available for supply, and the size of the airhead, restrict the location of supply airfields. After the exploitation phase has commenced, plans are made to secure additional sites for supply airfields closer to using forces to economize on the use of ground transport.

(2) *Highway, rail, and pipe line.* Procedures for ground transportation within an airhead conform to the provisions of FM 100–10.

(3) *Aerial ports headquarters.* Provision must be made for the receipt, sorting, and delivery of supplies at, and from, the landing airfields in the airhead. For this purpose an aerial ports headquarters may be organized in the airhead. This organization controls aerial ports at each airfield in the airhead which is used for the landing of supplies and equipment. The number of such aerial ports and the composition of each will depend upon—

(*a*) Number and characteristics of airfields.

(*b*) Tonnages to be handled at the receiving airfield.

(*c*) Estimated return flow of evacuation casualties, returned personnel, and salvage.

(*d*) Estimated number of reinforcements to be brought forward.

(*e*) Distance between airfield and depots or supply points to which supplies are to be delivered.

f. Service.

(1) *Service troops.* Airborne divisions and air-landed divisions, have organic service troops. A corps or an army in airborne operations should be provided with the service units required to support combat operations; these are listed in a service troop list. The service troop list cannot be rigid since many factors determine the number and type of service units required. (See FM 100–10.)

(2) *Construction and real estate allocation.* Because of the restricted size of the airhead and the congestion resulting therefrom, the airborne force commander must plan

to exercise strong centralized control over construction and allocation of real estate for all units in the airhead.

g. Miscellaneous.

(1) *Boundaries.* As the airhead is consolidated, division and corps rear boundaries should be concentric with the perimeter of the airhead.

(2) *Headquarters.*

(*a*) In normal ground operations the headquarters of an airborne division is divided into a forward and rear echelon in the same manner as that described in FM 101–5, paragraph 58.

(*b*) In airborne operations, the headquarters is divided in the same manner except that the composition of the forward and rear echelons is modified to meet the circumstances. The forward echelon or command post participates in the assault and is located in the airhead. The forward echelon consists of the commander and all staff officers required to assist him in the conduct of the operation. It may be divided in the airhead by the formation of an advanced command post. The rear echelon of the headquarters may remain at the rear base or accompany the follow-up echelon, depending upon the size and duration of the operation. If the airborne division is part of a larger force which will conduct operations in the airhead for an appreciable period of time or if the airborne division will continue in a ground role after link-up, the major portion of the rear echelon of division headquarters joins the division as early as practicable.

(*c*) The headquarters of an air-landed infantry division is echeloned in much the same manner as an airborne division.

(*d*) A corps headquarters normally maintains a rear echelon at the rear base area until such time as all units of the corps have been phased into the airhead.

(*e*) An army headquarters should maintain a rear echelon at the rear base until the airhead has been consolidated. A control group from this rear echelon continues to function at the rear air base under a senior officer, who is responsible for liaison with the air forces and coordination of movement of supplies and personnel to forward supply airfields, until ground

juncture has been completed or a communications zone section has been established in the airhead.

(3) *References.* G4 staff functions follow the principles enunciated in FM's 100–10 and 101–5. Reference data are contained in FM 101–10.

40. LOGISTICAL PLAN—PLANNING SCHEDULE

In order that armies, corps, assault airborne divisions, and air-landed divisions may prepare their logistical plans for an airborne operation, and be prepared to participate in an operation in as short a time as possible, it is necessary that the theater logistical planning staff prepare plans for the support of subordinate ground and air commands to insure that adequate facilities and supplies are available at the proper time. Sufficient time must be given all units of an airborne force to make the required logistical preparations. Armies, corps, airborne divisions, and particularly air-landed divisions must have detailed prior plans drawn up to be used in an airborne operation. These plans should include aircraft requirements, equipment to be exchanged for air-transportable equipment, and equipment that will rejoin the unit with the land or sea tail. Suggested planning time tables for army, corps, and division G4s are as follows:

a. Army.

*Prior to**

D–45: Determination and tentative selection of required number of marshalling camps.

Determination of the estimated duration of airhead operations.

Determination of the approximate amount of daily maintenance and build-up tonnages required.

Determination of the level of supply to be maintained in the airhead.

Determination of availability of required supplies for an operation.

Determination of the availability of logistical resources within probable airheads.

Determination of the availability of aircraft for an operation.

Determination of the ability to deliver required supplies to rear supply air bases at the required times.

Determination of the characteristics of airfields within probable airheads.

* Based on theater planning directives.

Determination of the availability of evacuation and hospitalization facilities for the support of an operation.

D–45: Major subordinate commands receive from theater an operational directive, including logistical plan.

Preparation of army logistical plan commences.

Preparation of detailed service troop list commences.

Preparation of marshalling camps commences.

D–40: G4 conference on logistical support with corps concerned.

Alerting of service units to be used for the operation.

Selection of bivouac and assembly areas for use of all units to participate in the operation in order that they may be reorganized and reequipped for the operation.

Conference with communications zone section concerned on availability of required equipment and supplies and on the program of readiness of marshalling camps.

D–37: Conference with troop carrier command on supply organization and facilities for supply to the contemplated airhead.

D–33: Logistical plan completed.

D–30: Completed logistical plans furnished assault corps.

Assault corps relieved of current tactical operations.

Service troop list completed and service troops receive directive for participation in operation.

D–25: Coordination with corps on phasing of army service units into the airhead.

D–20: Movement of army service units to assembly areas commences.

Follow-up corps relieved of current tactical operations and furnished completed logistical plan.

Planning for build-up commences.

D–15: Assault airborne divisions, not at home stations, close-in assembly areas.

D–14: Delivery of build-up supply to rear air supply bases commences.

Packaging of build-up supply commences.

D–10: Air-landed divisions close into assembly areas.

D–8: Reorganization and equipping of army service units completed.

Construction of marshalling camps completed.

D–4: Movement of assault airborne forces and specified service units to marshalling camps completed.

D–1: Movement of follow-up divisions and service units to marshalling camps commences.
Loading of equipment of assault airborne forces and initial service units.

D–day: Loading of personnel and individual equipment.
Departure of airborne assault forces.

b. Corps.

D–40: Alert order for airborne operation received.
Initial logistical planning commences.

D–35: Organic corps units to participate alerted for airborne operation.

D–30: Complete army logistical plan received by assault corps.
Assault corps relieved from current tactical operations.

D–28: Assault airborne divisions attached to assault corps and alerted for operation.

D–21: Assault corps logistical plans completed.

D–20: Follow-up corps relieved from current tactical operations and furnished complete logistical plans.
Follow-up divisions alerted for operation.
Detailed corps logistical plans furnished assault divisions.

D–11: Detailed corps logistical plans furnished follow-up divisions.

D–9: Assault corps completes reorganization and equipage of corps troops.

D–7: Assault corps checks on follow-up supply at rear air supply bases.

D–4: Assault airborne force completes move to marshalling camps.

D–1: Follow-up corps troops commence move to marshalling camps.
Loading of equipment of assault airborne forces.

D–day: Loading of personnel and departure of assault force.

c. Division.

D–28: Assault airborne divisions receive alert for operation to include future attachment to assault corps.

D–20: Assault airborne divisions receive completed logistical plan for operation from assault corps.
Preparation of assault division administrative order commences.

D–18: Follow-up divisions receive alert for operation to include future attachment to follow-up corps.

D–11: Follow-up divisions receive completed logistical plan from follow-up corps.

Preparation of follow-up divisions administrative order commences.

D–10: Procurement of accompanying supplies for operation from communications zone section depots commences.

Sufficient personnel and cargo parachutes packed for the operation.

D–7: Completed administrative order from corps received by both type divisions.

Final shortages of supplies determined and requisitions submitted.

Issue of assault supplies to units is made.

Determination of changes in follow-up supply and initiation of procurement-issue verbal administrative instructions.

D–6: Determine composition of road convoys.

Obtain routes and road clearances and complete plan for movement to marshalling camps. Communications zone section makes final report on accommodations at marshalling camps; ration strengths for marshalling camps submitted to communications zone section.

Determine landing areas for follow-up supply.

D–5: Obtain replacement of remaining shortages of supplies.

Obtain priority for movement of units to marshalling camps.

Complete arrangements for additional transportation for movement to marshalling camps.

Complete preparation of administrative order and issue to units.

Review completeness of supply and equipment.

Assault airborne divisions complete movement to marshalling camps.

D–4: Assault airborne divisions maintain close contact with division liaison sections and marshalling camp commanders to coordinate replacement of last-minute supply shortages.

D–1: Follow-up divisions begin movement to marshalling camps.

Assault divisions load equipment.

D–day: Loading of personnel and departure of assault airborne divisions.

41. PERSONNEL PLAN

a. Troop Strengths and Locations. As in all other combat units, every effort must be made to keep the command at its full authorized strength. This will require energetic action to eliminate existing understrengths of trained airborne personnel and to eliminate mental and physical ineffectives.

b. Replacements.

(1) It is advisable to requisition airborne replacements on estimated losses prior to an engagement. This is because of the relatively small number of airborne troops and the extra time required to train an airborne soldier.

(2) In estimating losses for the assault phase, casualties must be computed for parachute and airplane landings. Casualty reports should indicate these types of losses under killed in action and wounded in action and, for future estimates, should also give other pertinent data regarding casualties to include the terrain and weather in the landing areas.

(3) Other factors to be considered in making an estimate of casualties are—

(*a*) Whether the operation is to be conducted during daylight or at night.

(*b*) Antiairborne obstacles.

(*c*) Enemy order of battle in the landing area.

(*d*) The location of and the time that enemy reserves might be brought into action.

(*e*) The amount of enemy armor and artillery in the airhead area.

(*f*) Probable enemy interception of planes and gliders.

(*g*) Enemy antiaircraft artillery installations on flight route.

(*h*) The relief plan for airborne troops.

(*i*) The mobility and fire power of the airborne troops.

(4) In coordination with G3, a combat replacement scheme must be developed. Except in emergencies, replacements are not jumped into the airhead.

(5) For further details see FM 101–10.

c. Law and Order.

(1) Provision must be made to detain personnel refusing either to enter aircraft at departure fields or to leave aircraft on arrival at the objective area. In combat operations, such cases are usually disposed of by general

courts-martial. In training operations, these cases are normally handled by special courts-martial or other lesser disciplinary action.

(2) Initially the control of stragglers is usually delegated by divisions to the regimental combat teams because of the dispersion and consequent ineffectiveness of division control. However, division should plan to assume the responsibility of straggler control as soon as practicable.

d. Prisoners of War. The problems of evacuating and guarding prisoners of war are initially a regimental combat team responsibility because of the nature of the combat. The higher unit should plan to evacuate from the lower as soon as sufficient control is established.

e. Burials and Graves Registration. Decentralization of the normal responsibilities for burials and graves registration is often necessary in the initial stages of combat. The establishment of temporary cemeteries and the evacuation and proper interment of the dead will be a responsibility of the local commander in the initial phase. In the combat zone, battle-field search and evacuation to the collecting points usually are the responsibility of combat organizations. Sites for the establishment of temporary military cemeteries are selected by the quartermaster with the technical assistance of the engineer. It is desirable to centralize burials at the highest command levels as soon as possible.

f. Morale.

(1) Personnel on leave are usually recalled when the mission assignment, or the general alert, is given to a unit. During the airborne operation, quotas to rest areas are usually suspended.

(2) Provisions must be made to safeguard unit and personal funds during the action and funds that are taken into the objective area, private and Government, should be in the proper currency. For security reasons, the departure airfield is the proper place to make currency exchanges.

(3) Outgoing mail is ordinarily suspended several days prior to D-day for security reasons. However, this fact need not be publicized. Because of the critical status of air transportation, incoming mail is usually suspended during the initial stage of the airborne operation.

g. Civil Affairs—Military Government. Consideration must be given to the problem of entering civil affairs-military government personnel into the combat area. Ordinarily this personnel should go into the objective area with the leading assault transport elements.

h. Troops Required to Support the Personnel Plan. Troops required to support personnel functions include units suitable for graves registration, postal and finance services, replacements, special services, military government, military police, and for maintenance of records. In addition, G1 is interested that the proper allotment of bakery, laundry, and bath units is provided.

i. Training of Replacements. To conserve manpower it may be desirable to provide training centers for airborne replacements in the theater of operations. The training centers normally—

(1) Check the training of replacements received from the zone of interior.

(2) Give additional specialized training.

(3) Train volunteers for airborne duty from the theater of operations.

(4) Hold overstrengths of airborne units committed to action until the replacements are required.

j. G1 Functions.

(1) *Army and corps G1.* Army and corps G1 functions are as stated in FM 101–5.

(2) *Division G1.* The G1 of a division which is engaged in an airborne operation is charged with the staff responsibilities as prescribed in FM 101–5. In addition, the following problems, peculiar to airborne operations, must be considered.

(*a*) The problems of overstrengths and replacements arising from the special training.

(*b*) The policy of permitting parachute personnel to withdraw from their voluntary status, other than when in combat or when an active mission assignment is imminent, merits special attention of the G1 in order to maintain the volunteer status of the maximum number of individuals.

(*c*) The dispersion of units during the initial phase of airborne combat requires decentralization of certain personnel functions until division control is obtained. The division G1 can divide his section into two groups: one to enter the objective area and one to remain at the rear echelon. It will be necessary to take several members of the adjutant general's casualty report section into the objective area in order to have quick and accurate data for reports and casualties.

(*d*) The distance between the command post and the rear echelon requires that personnel plans be completed

before the airborne operation begins. Once the troops are committed in the objective area, it is usually too late to rectify errors or omissions during the early phases of the combat action.

(*e*) Records and reports do not lend themselves to electrical transmission and must be sent to the rear by aircraft.

k. Public Information. Airborne operations are inherently spectacular and particularly newsworthy. It is, therefore, essential that airborne public information planning be initiated at an early date to insure a continuous flow of unclassified information to the civilian public.

(1) *Initiation of planning.* Initial public information planning for an airborne operation should be started at the highest echelon as soon as possible after the operational plan has been approved. Although security requirements will nearly always prevent any advance publicity, this increases rather than decreases the need for early initiation and complete coordination of public information planning. Planning is initiated by the highest command by the issuance of a policy information directive.

(2) *Scope of plan.* Armed forces public information policies provide for cooperation with professional civilian war correspondents who report to the public through established civilian news media—press, radio, television, and motion pictures. Therefore, public information plans for airborne operations must contain adequate provisions—

(*a*) To transport correspondents and their essential equipment to the scene of operations.

(*b*) To insure that correspondents have a sound understanding of the action they observe.

(*c*) To transmit written, photographic, and radio reports from the airhead to the designated censor.

(3) *Coordination.* As in any other joint operation, the coordination of all details of the public information must be complete. This can be accomplished by frequent conferences and a complete understanding between the public information officers of the Air Force and the Army at all appropriate echelons.

(4) *Security.* Public information security is maintained primarily by requiring that all news material be censored before release and transmittal to the zone of interior. Plans should be made to establish censorship facilities

in the airhead as soon as practicable in order to expedite the release of public information.

(5) *Public information annex.* A public information annex to the operation order should be prepared for any airborne operation of division or larger size to insure that all concerned receive adequate instructions covering the details of the plan that are peculiar to the particular operation.

Section IV. PREPARATION OF ORDERS

42. GENERAL

Orders and annexes used in airborne operations are prepared in the same general form by the same methods common throughout the services. Staff action and staff responsibilities prescribed in FM 101–5 are applicable to preparation of orders and annexes. Principal differences are—

a. Information and orders for the assault phase are in detail since the order initiates a complete new military action.

b. The air movement table and other annexes are either published jointly by troop carrier and the army unit or very closely coordinated.

c. Information peculiar to airborne operations requires annexes which are not normally used for ground operations. See appendix XI and FM 101–5 for examples of annexes which may be used.

43. OPERATION ORDER

Appendix XI shows a typical operation order. If the operation is to be over water, an air-sea rescue annex is necessary. The signal annex should include pathfinder arrangements.

44. ADMINISTRATIVE ORDER

Appendix XIV.

45. INTELLIGENCE ANNEXES

For a detailed discussion of the preparation of intelligence annexes, see paragraph 29 and appendix XVII.

Section V. REHEARSALS

46. GENERAL

Since speed is of such importance in airborne operations, every

detail of the operation should be rehearsed if time permits. This especially applies to night operations.

47. REHEARSAL PROBLEMS IN AIRBORNE OPERATIONS

a. The complex nature of airborne operations requires a high degree of cooperation and coordination between the participating services. Early planning is initiated to insure that the following are available:

(1) Troop carrier aircraft.
(2) Suitable training areas.
(3) Critical items of equipment to replace those damaged or lost.
(4) Replacements for casualties sustained during rehearsals.

b. Problems inherent to airborne operations which can be effectively rehearsed are—

(1) Marshalling.
(2) Loading of aircraft in accordance with air force balancing procedure and requirements.
(3) Unloading of aircraft.
(4) Communication procedures.
(5) Assembly and control procedures after landing.
(6) Execution of the tactical plan.
(7) Supply and transportation procedures in the objective area.

48. TYPES OF AIRBORNE REHEARSALS

The lack of equipment and suitable training areas often limits the size of the rehearsal or necessitates the assumption of artificial conditions. However, every effort should be made to stage a rehearsal paralleling the conditions found in the operational plan. Rehearsals should be held from the battalion to the largest unit as time and facilities permit. Full-scale rehearsal of units larger than the division will be exceptional.

49. SECURITY ASPECTS

Rehearsals may cause a breach of security. Large-scale rehearsals when carefully controlled may provide means for misleading the enemy. Based on counterintelligence considerations, the commander must determine the conditions under which rehearsals are to be held.

50. THE COMMAND POST EXERCISE

In the event it is impossible to stage operational rehearsals, a thorough and complete command post exercise (CPX) should be held under field conditions as nearly similar to those of the actual projected combat area as can be located. Few, if any, restrictions operate against the holding of a CPX on the highest level. They should be conducted for all echelons including troop carrier forces.

CHAPTER 3
MARSHALLING

Section I. GENERAL

51. SCOPE

"Marshalling" is the term commonly used to define the process by which units of the army forces participating in an airborne operation move to departure airfields, complete preparations for combat, and load into aircraft ready for take-off. This definition of the term "marshalling" should not be confused with a different connotation given to it in Air Force terminology.

52. PURPOSES

Units are placed in marshalling camps to facilitate close liaison with troop carrier units; insure adequate briefing; insure complete security as to the detailed plan for the pending operation; allow tactical units to be divided into assault, follow-up, and rear echelons; and to control preparations for air movement.

53. METHODS OF MARSHALLING

a. All airborne assault units are marshalled simultaneously at marshalling camps at or near troop carrier fields. The units remain at the marshalling camps long enough to be briefed. A minimum of 4 days in marshalling camps will usually be required. Firm liaison is established with troop carrier units to permit detailed coordination. Aircraft are carefully combat-loaded. Assault units are given necessary service by the communications zone marshalling camp personnel to permit them to prepare for combat.

b. If their home stations are a considerable distance from the marshalling area, air-landed units are concentrated in centralized assembly areas from which they will move to the marshalling camps after the airborne assault units depart. While in marshalling camps units should be fully combat-loaded, but they may or may not be sealed. The communications zone controls the movement of these units to marshalling camps subject to priorities designated by the commander in the airhead. Marshalling camp

personnel and specialists in loading methods furnish required assistance in loading. Liaison with troop carrier units is effected through a representative of the headquarters controlling the operation who is permanently stationed at each departure airfield.

54. TROOP CARRIER DISPOSITIONS

The physical locations of troop carrier airfields materially influence plans for marshalling. The troop carrier units in a theater are normally stationed on a series of airfields located in the communications zone and within range of probable objectives in enemy-controlled territory. These fields may be widely separated. Each troop carrier wing usually occupies one airfield. All units are linked by a system of telephone, teletype, radio, and messenger communication.

55. BASIS FOR MARSHALLING

The tactical, landing, and air-movement plans form the basis for determining the number of personnel and vehicles to be stationed at or moved through each airfield.

56. MOVEMENT TO THE MARSHALLING CAMP

The G4 of the unit to be marshalled notifies the communications zone as to the number of organic vehicles the unit can furnish for the movement of its personnel and equipment to the marshalling camps. This information and the troop list, furnished by G3, must be available early enough during planning for the communications zone to procure the additional vehicles or trains required for the movement. The communications zone may control the movement completely or may be furnished a copy of the march table so that it can control the traffic out of the assembly area, along the route of march, and into the marshalling camp. The actual assignment of troops to areas is made by advance parties of the occupying units which arrive at the camp in advance of the main bodies.

57. CONTROL OF MARSHALLING CAMPS

When marshalling camps are located on airfields, the marshalling camp area is temporarily placed at the disposal of the communications zone. The permission of the troop-carrier base commander is obtained for the tactical units to carry on such activities as are required outside of the camp area.

58. ARRANGEMENTS

The G4 of the unit to be marshalled advises the communications zone, through a liaison officer or by personal contact, of the requirements for his unit for supply and storage facilities at the marshalling camps. G1 requisitions replacements and requests recreational facilities. G3 submits the troop list and outlines his training, briefing, and rehearsal requirements. G2 coordinates arrangements for security and deception measures to insure secrecy. All arrangements must be made far enough in advance of the marshalling period to enable the communications zone to procure the facilities and install them where necessary.

Section II. MARSHALLING CAMPS

59. GENERAL

a. The marshalling camp is a sealed area with facilities for final preparation of troops for combat. The communications zone constructs the marshalling camps. The selection of areas and determination of accommodations to be furnished at the camps are influenced by the location of airfields to be used, the existing facilities, the time available, the availability of construction troops and materials, and the troop list furnished by units of the army forces participating in the operation. To insure coordination of units of the army forces with troop carrier units in briefing and rehearsals, and to facilitate loading, camps are located at or near each airfield.

b. For security reasons the camp will normally be within a wire enclosure.

c. Troop carrier and units of the army forces are usually quartered, rationed, and briefed separately, but are brought together for joint briefing, rehearsals, and for actual loading, take-off, and flight. The camp operating personnel are quartered and rationed separately from airborne forces and troop carrier personnel insofar as practicable.

60. OPERATION

a. The communication zone section commander is responsible for the operation and maintenance of the marshalling camps. Operating detachments and necessary equipment are provided for each camp. These detachments furnish such services as signal communication, transportation, medical, and postal. They also operate mess facilities and utilities. Personnel from the units

being marshalled or follow-up units of the airborne force may assist in the operation of the camps when such assistance will not interfere with their preparations for the airborne operation. Equipment from these units cannot be used since it must be packed and loaded for movement to the objective area.

b. Small stocks of supplies and equipment of all services are maintained at each camp to fill last-minute shortages of the units being marshalled. Necessary service maintenance support is furnished as required.

c. The number of communications zone troops required for operation and maintenance of marshalling camps varies. A general rule, based upon past experience, is that the number of supporting service troops required will approximate 10 percent of the troops being marshalled.

61. ADMINISTRATIVE FACILITIES

a. Quarters, unit headquarters, messes, supply rooms, and latrines should be constructed and allocated so as to maintain unit integrity.

b. Cover is required for dry storage and issue of parachutes, special equipment, and stocks of individual and organizational equipment.

c. Shop space or hardstanding is required for dismantling equipment for plane loading and for last-minute inspection and repair.

d. Joint troop carrier-army command post facilities are made available.

e. A coordinated communication system is installed by the communications zone to permit assault troops to exercise control during the briefing period and to allow the communications zone to control the movement of build-up troops.

Section III. BRIEFINGS

62. BRIEFING PLAN

Briefing is a joint responsibility of the intelligence and operations sections. A briefing plan should be prepared which states time, place, personnel involved, and scope of detail to be covered. Within this plan, subordinate unit commanders will brief their troops to insure that each individual has a sufficient knowledge of the plan of operations to perform his duties.

63. BRIEFING AIDS USED

a. The G2 should insure that the necessary briefing aids are available before troops enter the marshalling camps.

b. An annotated low-altitude air photo of the landing area, explained by photo interpreter personnel, is the most effective briefing aid. Accurate terrain models and sand tables of the airhead are effective. Large-scale maps with defenses and obstacles overprinted from latest air photos are valuable.

64. DATA USED

a. Each unit should be given as much information regarding the plan as is necessary for it to operate independently. It should then be briefed thoroughly as to the detailed part it is to play in the over-all plan. Finally, it should be emphasized that in case of premature drop or release, or failure to land on designated landing zones, the mission of all troops is to conduct themselves in accordance with the over-all plan.

b. It is sound practice for commanders of all infantry regiments and battalions, which are to be in the assault, to be given a common briefing on all battalion missions. In case of an inaccurate landing, battalion missions can then be shifted with minimum delay.

c. The briefing facilities used by the assault units should be retained for use of build-up units. Advanced landing fields, assembly areas, and routes in the airhead can be shown to interested personnel and the current situation reviewed on the basis of situation reports.

65. SECURITY IN BRIEFING

For security measures during briefing, see appendix XVIII.

Section IV. SUPPLY PROCEDURES

66. SUPPLY PRIOR TO MOVE TO MARSHALLING CAMPS

a. Prior to moving to marshalling camps, all units and individuals obtain the equipment which is to be flown into the airhead with the unit. Showdown inspections are held to determine the status of equipment. Parachutes and aerial delivery containers are packed and prepared at home stations. Units also take additional clothing and equipment for use in the marshalling camp.

b. Individual clothing and equipment not needed in the airhead are packed in suitable containers and left for storage by rear echelon or communications zone personnel.

67. MOVEMENT AND STORAGE OF SUPPLIES

a. Supplies are moved to marshalling camps, in organic or communications zone transportation, either prior to or simultaneously with the personnel move.

b. Parachutes and aerial delivery containers are kept in dry, covered storage. Rations, gasoline, and ammunition to be bulk-loaded in aircraft can be stored in the open if necessary. Supplies loaded in organic transportation, which is designated to accompany troops by air, will not normally be removed from such vehicles while at the marshalling camps. This equipment is guarded and necessary checks made to determine that it remains in good condition until departure by air.

68. MAINTENANCE OF EQUIPMENT

a. After closing into marshalling camps, all units conduct further inspections to determine adequacy of equipment and supplies. Requests for replacement or repair are made to the marshalling camp commander. Camp commanders make necessary replacement or repair in accordance with the pertinent communications zone section administrative orders. Items not available in camps are requisitioned by the camp commander.

b. The stocking of bulk supplies at appropriate airfields by the communications zone and troop carrier force is not considered part of marshalling.

Section V. MORALE

69. GENERAL

In all combat units a high state of morale is developed by good leadership and training. These, in turn, generate an *esprit de corps* that will overcome adversities. If the unit spirit is not highly developed before reaching the marshalling camps, there is little hope for success on a difficult mission. Therefore, the problem at the marshalling area is mainly to maintain a high state of morale.

70. PLANNING AND ACTIVITIES

a. During this phase, with combat imminent and the command sealed in the marshalling camps, tenseness will develop. It is, therefore, necessary to plan off-duty activities for the troops. This can be accomplished by providing the maximum amount of athletic, recreational, and religious facilities. Efficient administration is necessary to insure that quarters and food are good and that necessary personal services for the individual are furnished.

b. Plans must be made to prepare for a possible drop in morale which may be caused by postponement of operations. Units which have been placed on continuous alert to facilitate rapid employment must plan, in advance, to overcome lowering of morale under such conditions.

Section VI. LOADING

71. LIAISON

a. Upon receipt of directives or orders to participate in an airborne operation, commanders of army and troop carrier units concerned immediately exchange experienced and competent liaison officers to act as advisers and coordinators on all matters of common interest. Such exchange of liaison officers extends through all echelons as orders are issued.

b. Duties of a liaison officer are—

(1) To represent his unit commander at the headquarters to which he is detailed.

(2) To act as adviser to the headquarters on matters pertaining to his own command.

(3) To coordinate all matters involving dual responsibility such as—

(*a*) Joint staff meetings.

(*b*) Joint briefings.

(*c*) Availability of equipment.

(*d*) Provision and implementation of plans for marshalling, parking, and loading of aircraft.

(*e*) Examination of parallel orders to ensure complete agreement of plans and arrangements.

(*f*) Procurement of equipment and facilities belonging to his own command which are required by the command to which he is detailed.

(*g*) Preparation of joint reports.

(*h*) Procurement of aircraft parking plans from the troop carrier unit as needed.

(4) To be familiar with the location and capacity of all installations at the airfield with which his commander, staff, or troops, will be concerned.

(5) To be familiar with plans and arrangements for alternate aircraft in the event of last-minute failures and be prepared to assist the movement of troops from defective aircraft to the alternates.

(6) To be familiar with all air-movement forms.

c. Liaison officers stationed at airfields are usually detailed by, and represent, the highest army forces headquarters participating in the operation.

72. AIRFIELD ORGANIZATION

a. An airfield joint command post, plainly marked, is established at each airfield for the use of the air force and airborne unit commanders involved. It is normally in close proximity to the field operations office. The command post is connected by telephone with all headquarters and personnel responsible for controlling movement and enplaning of troops and matériel. The command post is provided with a radio-equipped vehicle tuned in on operations control channels for the use of the troop carrier commander or his liaison officer.

b. An aircraft dispatch control unit is established by the air force on each airfield to control the movement and dispatch of troop carrier aircraft from the airfield. A transportation movement control unit, which may be an aerial port if one is operating on the airfield, working in close coordination with the aircraft dispatch control personnel, coordinates the movement of army units and cargo to the airfield. Personnel from this movement control unit also assist airborne unit commanders in loading expeditiously.

73. ALLOWABLE CARGO LOAD

The cargo load of an aircraft varies inversely with the range or radius of action. It also varies with the anticipated condition of the landing airstrips and airfields, meteorological conditions, and the altitude at which the aircraft must fly. As a result, the allowable cargo load available to the airborne forces must be established by the troop carrier commander for each particular operation. This is done at the earliest possible moment. An estimate of the aircraft required by units, load manifests, and lashing diagrams for nonstandard or awkward loads should be prepared well in advance of a given operation. A preplanning average allowable cargo load for an average radius of action may be agreed upon between the troop carrier and army units for this purpose.

74. LOADING OF ASSAULT AND FOLLOW-UP UNITS

a. The troop carrier unit commander provides, through the liaison officer, parking diagrams of airplanes. These diagrams show the number, location, and sequence of take-off of the aircraft and the location of reserve aircraft.

b. All aircraft are marked, usually in chalk on both sides of the fuselage, with numbers which correspond to the load numbers on the load manifests.

c. Movement on the airfield is restricted to a minimum and is under air force control. Routes to, and from, enplaning and loading

areas are clearly marked. Strict control of both air and ground traffic is maintained on and across runways and taxi strips. Guides, when required, may be provided by the army units under the control of the liaison officer.

d. Aircraft personnel loads are moved to a control point in accordance with the loading plan. Guides then lead them to their respective aircraft for loading.

e. Army units are responsible for enplaning, loading, and lashing their accompanying supplies and equipment under supervision of the troop carrier representative. The pilot of the aircraft has the final decision on matters affecting his aircraft. Loading of each aircraft is performed, as far as practicable, by the aircraft's passengers. Air crews are not required to, but may, assist in loading.

f. Provision for loading aids and materials such as ramps and tie-down equipment is a troop carrier responsibility. The army forces commander inspects to insure adequacy of these facilities.

g. A reserve of aircraft (spares) is maintained at each airfield to insure complete serials in the event of last-minute failure of aircraft. The time of take-off of allotted reserve aircraft is dependent on the situation at the moment and is the responsibility of the air force commander.

h. Certain basic principles apply in loading aircraft in airborne operations. They are as follows:

(1) It is desirable, if not imperative, to place enough men in each load to unlash and unload upon arrival at the destination.
(2) Unit commanders strive for tactical loading. All individuals carry their complete combat equipment. Ammunition accompanies each weapon.
(3) Key personnel and equipment are distributed throughout several aircraft.
(4) Essential equipment, such as radios, is duplicated to safeguard against loss or damage.
(5) Every load is safely balanced and listed on a flight manifest form.
(6) Safe lashing is accomplished on all loads.

75. AIR-MOVEMENT FORMS

The characteristics of aircraft and the requirements for safety in flight make it mandatory for aircraft loads to be compiled in detail. This staff work can best be performed on six forms as follows:

a. Basic Planning Guide. This form is completed by the ground forces unit commander to show the exact status of personnel and equipment of the unit (app. XIII).

b. Aircraft Allotment Table. This form indicates the type aircraft available and assignment of aircraft to units. It is a *work sheet* used as a reference in accomplishing form 2 (*d* below and app. XIII).

c. Aircraft Assignment Work Sheet. This work sheet is used in airborne units only as a device to simplify preparation of an air-movement table (app. XII).

d. Air-movement Table. This form is prepared by the army forces commander in coordination with the troop carrier commander. This form, used as an annex to the operation order, prescribes the allocation of aircraft to the organizations of the ground units to be lifted. It further designates the number and type of aircraft in each serial and specifies the departure area, and time of loading and take-off (app. XIII).

e. Aircraft Loading Table. This form is a data sheet used by the army forces company commander and is forwarded to battalion headquarters. It may be sent to the air forces commander for his information. It contains information as to the load that actually goes into the aircraft. This form can be used as an annex to a battalion operation order (app. XIII).

f. Flight Manifest. This form is a record of personnel by name, rank, and serial number of the personnel in each aircraft. It also gives a brief description of the equipment loaded, with the station number as loaded in the aircraft. Weight and balance computations for personnel and equipment are also listed. The senior army member of each aircraft is responsible for the preparation of the flight manifest for his own aircraft, but the company or similar unit commander usually prepares the form for all personnel and equipment of the unit. One complete copy of the flight manifest must remain at the departure airdrome (app. XIII).

CHAPTER 4
EXECUTION OF AIRBORNE OPERATIONS

Section I. THE AIR MOVEMENT

76. PREPARATION

a. The air movement of assaulting airborne troops delivers the force to its assigned landing areas, with minimum dispersion in time and space, to achieve maximum benefit from tactical surprise. To accomplish this, enplaning, take-off, and air assembly of serials from all airfields are closely scheduled by the air headquarters controlling the overall air movement.

b. Each troop carrier group follows a standing operating procedure to fit the characteristics and local air traffic pattern for its airfield. This standing operating procedure designates the system used to expedite take-off or landing, loading points, local formation, assembly pattern, emergency and crash drill, and other details concerning airfield operations.

c. Airplanes are normally loaded with both equipment and personnel in dispersal sites.

d. Rapid marshalling for airborne operations requires a considerable number of trucks and materials handling equipment to assist in loading of heavy equipment and supplies for aerial delivery. This may require vehicles and equipment which are not normally available to the assault airborne force and will necessitate use of specially equipped supporting service troops to assist in loading.

77. IN FLIGHT

a. The flight to the landing area is closely regulated because air serials must take position in their assigned air space while moving at a high rate of speed. Each serial takes off and assembles into formation over its home field before departing on a course to the division assembly point. By variation of air speed, and minor deviations in course, serials pass over air force assembly points and then to the troop carrier command assembly point on a precise time schedule. This assembly procedure funnels the air serials into troop

carrier command column(s) in the desired priority of landing and with the proper space between serials. From the command assembly point, all type serials fly at a specified air speed over the remainder of the route.

b. Navigation aids such as lights, radio, and radar beacons are placed at each control point and at intervals along the route over friendly territory to insure accurate navigation. All navigation aids transmit a distinctive code letter.

c. Troop carrier forces can fly serials varying in size from 3 to 64 airplanes. The same number of airplanes flying in large serials have a shorter time and space length than a greater number of small serials because of the intervals between serials.

d. A time and space interval is necessary between successive serials in the air force stream. This interval, usually 4 minutes (measured from head to head) between serials, is necessary for three reasons. First, the serial itself varies from 1 to 2 minutes in time length. Secondly, some tolerance must be allowed for minor variations in timing at the various control points. The third and most important reason is the accordion effect which occurs when parachute serials reduce speed from 180 miles per hour to 120 miles per hour to discharge their load. Succeeding serials which are still cruising at 180 miles per hour are closing on the discharging serials at the rate of about 1 mile a minute. The interval between serials must absorb the difference in speed between cruising and drop speed.

e. In airborne operations, all parachute serials are usually dropped before assault aircraft begin landing. A time interval between the last parachute landing and the first assault aircraft landing is frequently necessary in order to permit the parachute troops to clear the landing zones of enemy small-arms fire and to cover the landing and assembly of the air-landed troops. Assault aircraft and parachute serials cannot be intermixed in an air-movement stream because of the air saturation caused by the assault aircraft circling in flight for landing. Assault aircraft cannot land on a drop zone following a parachute drop until equipment bundles, vehicles, weapons, and drop casualties have been cleared from the area.

f. The solution of air-traffic problems in a departure area where troop carrier airfields are in close proximity will frequently dictate the sequence of take-off of air-movement serials. When this is true, the sequence in which serials must take off will be announced by the troop carrier air force. This sequence of take-off and the airborne commander's landing priorities form the basis for the air-movement table and the airborne marshalling plan.

g. To reduce the time and space length of an air force column, two columns flying over the same route on a parallel course can be employed when the route over enemy territory is flown during daylight. This expedient reduces the time and space length to approximately half that of a single column. It effects considerable saving in time since, for example, an air force column of 21 serials would require approximately 1 hour and 20 minutes to pass a given point and would occupy an air space approximately 240 miles long. It is obvious that any reduction that can be made in the time and space length of the troop carrier column will materially reduce the area which must be protected by fighter escorts and decrease the time required to close and reorganize troops in the landing area. Two columns are not used because of the high risk of collision in the objective area unless there are two general objective areas separated by at least 15 miles.

h. Pathfinder serials, when required, precede the main troop carrier column to drop parachute pathfinder teams who place and operate navigation aids in the landing area. Pathfinder airplanes are equipped with electronic devices for precise navigation and are operated by highly trained air crews. After completing their primary mission, pathfinder groups may be used in subsequent lifts in the same manner as standard carrier groups. Pathfinder airplanes have a reduced pay load because of the weight of special equipment installed.

78. THE APPROACH

a. As parachute serials approach the drop zone, troops are warned by the pilots in sufficient time to make last-minute equipment inspections and prepare for exit. Before crossing the drop zone, the air formation reduces speed. The drop is made, on signal of the pilot, at correct speed and altitude.

b. The ground dispersion from parachute serials depends upon the joint skill of the airplane crews and the parachute troops they transport. Precise navigation to the proper drop zone; compact formation; correct speed and altitude for the drop; and rapid and proper exit of personnel, supplies, and equipment are all combined to attain good results on the drop.

c. The empty airplanes increase speed, execute the planned traffic pattern, and usually return over the same route but at a higher altitude to avoid in-bound traffic.

Section II. COMBAT OPERATIONS

79. GENERAL

a. Ground combat in airborne operations is conducted along conventional lines but under unusual conditions. Once these unusual conditions are appreciated, the tactics and technique of normal ground combat can be applied intelligently to ground combat in airborne operations.

b. The unusual conditions in airborne combat can be grouped under the four headings of the mission, terrain, enemy forces, and our own forces.

80. MISSION

The over-all mission of an airborne operation is invariably one of these types: either to deny the enemy use of critical terrain, or to hold critical terrain for our own forces, or a combination of the two. Strong reliance is placed on the element of surprise in the accomplishment of these missions. These missions, when translated into terms of objectives, usually require the seizure and defense of certain objectives and surrounding terrain. In early link-up type operations by airborne divisions, the division defends only the objectives, a drop zone for supply, and the required maneuver space. In independent type operations, which require air-landing of follow-up units, the airborne force defends a much larger area in order that the airfields can be operated effectively. In both types the tactical operation begins with an *initial assault* and then passes to *the defense*. Upon reinforcement or upon juncture with other ground forces, the airborne units resume the offensive or are withdrawn to prepare for subsequent operations.

81. TERRAIN

An airborne assault of appreciable size requires areas of reasonably level and open terrain to afford landing zones for the assault aircraft. In the event the entire assault echelon is parachuted, using heavy equipment drop techniques, much more latitude is allowed in the selection of landing areas. If the operation entails landing of airplanes, there must be large areas of level and open terrain in the objective area to provide airfield sites and unobstructed approaches to these sites.

82. ENEMY FORCES

An airborne force usually lands in enemy rear areas where there

are few fixed defenses and few well-organized combat troops initially. This condition simplifies the initial seizure of objectives, particularly when coupled with the high degree of surprise attained and the preponderance of force committed. However, as the enemy reacts, he may counterattack with appreciable forces. These attacks are initially hasty, uncoordinated thrusts along main routes of approach with any units available, but progressively increase in strength and width. Any armored units available are usually employed in these counterattacks. Defense against armored counterattacks is, therefore, a major consideration.

83. OWN FORCES

The equipment of units in an airborne assault is normally reduced below normal standards because of the technical limitations of parachutes and airplanes, and because of the requirements for reducing units to minimum gross weights. Although the degree of reduction varies, units are usually less mobile than in normal operations. The airborne force contains no tanks initially, although if large airfields are available to land the heavy cargo airplane, light tanks may be landed. The absence of, or limited numbers of, tanks and the reduced mobility of the force make it difficult to conduct offensive or defensive operations requiring shock action or high mobility. The missions assigned require the assignment of wide frontages.

84. CONTROL

The maneuver of the airborne force is coordinated by the selection of a reconnaissance and security line, an airhead line, other defensive lines, and necessary specific objectives, and by the assignment of boundaries (app. XI).

85. LANDING AND REORGANIZATION OF PERSONNEL AND MATERIEL

a. General.

(1) These two critical phases of the airborne assault are executed with all possible speed and precision. When necessary, security is sacrificed for speed and control of reorganization.

(2) Airborne troops should normally be landed as close to their objective as possible. The troops should have a reasonable time to collect equipment and assemble as tactical units before engaging in combat. Surprise may be

enhanced, however, by landing on the objective or making the move to the objective as short as possible. A short move will prevent the exhaustion of troops resulting from forced marches, carrying heavy combat loads and manhandling equipment over long distances.

b. Landing of Airborne Units.

(1) An airborne division customarily lands in three combat teams in three general drop zone areas in less than an hour. Command echelons are placed in assault serials. The actual landing is made by battalion groups. As much equipment as practicable is attached to individuals to increase their combat readiness upon landing and to decrease the time required for assembly. Additional equipment and supplies are dropped by separate bundles or landed by assault aircraft.

(2) The assault aircraft echelon lands in parachute combat team areas or in a centrally located area. Assault aircraft normally land after parachutists have cleared the area of local enemy resistance. Frequently a definite delay between arrival of the last parachute and the first assault aircraft serial is prescribed in the air-movement plan. Only when there is a requirement to saturate enemy defenses should parachute and assault aircraft serials land simultaneously.

(3) *Assault aircraft serials cannot land on parachute drop zones which have been used until the drop zones have been cleared of bundles and equipment.*

c. Reorganization of Airborne Units.

(1) Battalions and separate units reorganize in a prearranged manner making use of predesignated assembly areas, assembly aids, and identification markings for personnel and equipment. Assembly areas are established just off the landing areas. For reference they are identified by prominent landmarks and marked by assembly aids. The first parachute units to land are normally charged with gaining and maintaining the security of the drop and landing zones. Other units move directly to their assembly areas, by planeload, carrying with them all equipment needed for the assault. Upon arrival in the assembly areas, groups report to their respective command posts where the officer in charge directs them to their unit areas.

(2) To enable the regimental commander to make necessary changes in missions within the regiment, each battalion

commander reports location and status of personnel and equipment before moving from the assembly area to the objectives. Battalions will normally report readiness for action in 30 to 60 minutes.

(3) Designated personnel remain on the drop and landing zones to protect the area, assemble stragglers, establish prisoner of war collecting points, care for casualties, and to complete the removal of supplies.

(4) The reorganization of the division is complete when all units are assembled and communication is established.

86. INITIAL ASSAULT

a. The initial assault stresses the coordinated action of small units to seize the initial objectives rapidly before the advantage of surprise is lost. All commanders attack as rapidly as the situation permits, utilizing all available fire support. Reconnaissance units assigned to seize the reconnaissance and security line land in the first serials and move out rapidly to establish road blocks, immobilize enemy forces, disrupt enemy communication facilities, and provide the commander with early warning and information. If the initial objectives are heavily defended, the bulk of the force is assigned the task of seizing these objectives. If the initial objectives are lightly defended, the bulk of the force is assigned blocking missions on favorable terrain, thus establishing the airhead line. Artillery is placed under centralized control as soon as possible.

b. Units or personnel which are landed in areas other than those planned direct their efforts to the accomplishment of the general mission and establish contact with their respective headquarters as soon as practicable.

c. The regimental commander places himself where he can best coordinate the actions of his battalions to secure a decision.

d. The division commander shifts the fire of artillery, arranges for air support, and uses reserves as the situation dictates.

e. As soon as initial objectives have been captured, the combat teams seize further objectives which facilitate the establishment of a coordinated division defense. Then defensive positions are organized, communication supplemented, reserves reconstituted, and other measures taken to prepare the force to repel enemy counterattacks or to resume the offensive.

87. ESTABLISHMENT OF COMMAND POSTS AND COMMUNICATION

a. The immediate establishment of channels of communication,

as parachute, assault aircraft, and airplane elements arrive in the combat area, is essential for effective control of ground operations. The following are necessary for effective command control:

(1) Immediate establishment of command and fire control channels within the airborne forces.
(2) Communication with supporting air and naval forces.
(3) Communication with troop carrier forces concerned with build-up, air supply, and air evacuation.
(4) Communication to bases in friendly territory.
(5) Communication to widely separated airborne or ground forces with a common or coordinated mission.

b. Sufficient communication personnel and equipment must be moved into the airhead, in advance of the command post they are to serve, to insure the timely installation of vital communications.

c. The first Signal Corps personnel to be moved into the airhead will be landed at approximately the same time as the leading elements of the command post. The signal communication system then develops by successive steps to meet the requirements of the commander.

88. DEVELOPMENT OF THE AIRHEAD

a. Seizure and Organization of the Airhead Line.

(1) The major consideration after the initial assault landings have been made and the initial ground missions accomplished is the organization of the airhead line. The airhead line extends to a sufficient distance beyond the landing areas to insure uninterrupted landings of air-landed troops, equipment, and supplies, and secures the requisite terrain features and maneuver space for such further offensive or defensive operations as the mission may call for. When, due to the mission or enemy resistance within the airhead, units do not land on or near the airhead line, the advance to, and seizure of, the critical terrain features of the airhead line is accomplished with maximum speed. For purposes of coordinating this advance the airborne assault commander may designate successive objectives or phase lines. These successive objectives facilitate such reorganization of attacking troops, passage of lines, coordination of artillery fires, and changes in the direction of the attack as may be desirable.

(2) The airhead line is occupied and organized to the extent demanded by the situation. Adjustments in the preplanned dispositions of troops and installations are made

by appropriate commanders to fit the realities of the terrain and the situation. Appropriate reconnaissance and security measures are taken, which usually include the reinforcement of the reconnaissance and security line. The degree to which the airhead line as actually occupied and organized for defense is determined largely by the mission, the enemy capabilities, and the defensive characteristics of the terrain. For any given terrain, if the mission calls for an early continuation of the ground offensive beyond the initial limits of the airhead and if the likelihood of enemy counterattack during the interim appears negligible, then a minimum of effort only need be expended on the organization of the airhead line as a defensive position. On the other hand, if the mission calls for holding action on the boundaries of the initial airhead extending over a considerable period of time, or if an enemy counterattack appears likely, more effort is expended in organizing the airhead line as a defensive position. In the early stages of the operation, the defensive positions are usually lightly held and the bulk of the forces are held in reserve for counterattacking enemy penetrations. As reinforcing units are landed in the airhead the positions are more heavily organized.

b. Build-up. The build-up of the airhead proceeds concurrently with the seizure and organization of the airhead line. As additional combat troops arrive and are organized by unit, they are used to reinforce the frontline positions, to constitute reserves, and to prepare for such offensive operations as the mission may call for. Logistical development of the airhead is described in section III of this chapter.

89. DEFENSE

a. The defensive phase covers the time during which the airborne units defend the objectives seized and ends when a ground link-up is effected or when sufficient reinforcements are air-landed to enable the force to assume the offensive. During the defense phase the airborne force faces outward from the center of the airhead. The main body disposes itself to occupy positions on the airhead line. As enemy reactions develop, the airborne commander may execute a delaying action, adopt a defense on a wide front, or adopt a position defense. The normal procedure is to organize strong defensive positions on the airhead line covering the main routes of approach with the bulk of the force held in position of

readiness to the flank or rear patrolling the gaps between forward positions.

b. Each echelon of command combines a determined defense on a wide front, massed supporting fires, and strong counterattacks to defeat enemy forces as they are committed against the position. As the pattern of the enemy counterattacks is developed, the unit is regrouped to strengthen defense against more dangerous threats. If the airhead line becomes untenable, troops are withdrawn to previously selected positions a short distance to the rear. Local reserves are used to pinch off penetrations and general reserves are employed to deliver counterattacks around the flanks. If enemy pressure continues, further withdrawals may be necessary in order to gain time, and to shorten frontages, thereby increasing troop density. The entire procedure is based on forcing the enemy to deploy prematurely, defeating him in detail by massed fire power and aggressive maneuver, and retaining maneuver space by withdrawing only when forced to do so.

c. As soon as a juncture is effected or sufficient reinforcements have been air-landed, and additional administrative support is available, the airborne force assumes the offensive. If the enemy still has a preponderance of tanks, it is necessary to counteract this advantage by air strikes, deep envelopments, night attacks, and similar means. During this phase the reinforcing units often attack with the airborne units protecting the flanks. This gives greater impetus to the exploitation phase and provides the airborne units an opportunity to regroup and regain their full combat effectiveness.

90. ARMOR

Defense against enemy armor must be given added emphasis in airborne operations. The defensive positions selected must take advantage of all suitable tank obstacles, such as rivers, swamps, woods, villages, and gullies. Secondary routes around the flanks of the main forces are physically occupied and obstructed by demolitions, obstacles, and mines. Every attempt is made to avoid daylight withdrawals. The antitank and antiaircraft units available are located in depth in the most dangerous sectors.

91. AIR SUPPORT

A sound air support plan is an integral part of the ground combat plans. Reconnaissance to locate enemy forces, armed reconnaissance to drive them off the roads, isolation missions, and air

strikes on forces in contact are planned. Ample communications for liaison and control are provided.

92. SUBSEQUENT OPERATIONS

a. Exploitation. Ground operations to exploit the advantages obtained by the establishment of the airhead follow the normal pattern of ground operations.

b. Subsequent Role of Airborne Units. After the airhead has been firmly established, airborne units are either relieved to permit preparation for subsequent airborne assaults or are directed to prepare for sustained ground operations.

c. Withdawal from Airhead. Withdrawal from an airhead may be forced by the enemy or may be made voluntarily. Advance planning is imperative as the limitations of transport aircraft and the circular shape of the airhead introduce complicating factors not present in the normal ground withdrawal. When the situation permits, the plan usually provides for evacuation in the following sequence: supplies, matériel, and troops.

d. Landing of Air-landed Units.

(1) Based on the capacities of the secured airstrips or airfields, air-landed units land as rapidly as possible. If combat teams are expected to enter combat within a few hours after landing, unit integrity is maintained by landing on one airfield or adjoining airfields.

(2) Advance parties land early, if possible with the assault aircraft elements of the assault unit. Advance parties consist of quartering parties and guides equipped with necessary radios, wire, and assembly aids. A general deplaning area is designated where all incoming units are oriented and directions given through respective command posts.

e. Reorganization of Air-landed Units.

(1) From the deplaning area, air-landed units move by air serial organization to a designated assembly area carrying with them all equipment needed for their immediate task. Movement is controlled by guides and route markers.

(2) Upon arrival in combat team assembly areas, groups are directed to their subordinate areas where units report the status of personnel and equipment. Communication is established by all echelons. Wire and runner will be the normal means. Radio nets are not usually opened during this phase except when necessary to gain control over

units arriving at several dispersed airfields. Designated personnel remain on the airfields to care for casualties and to complete the removal of supplies. In the later stages of an air-landed operation, units are moved from the deplaning area in accordance with instructions of the airborne commander. Tactical integrity is regained after reaching assembly areas.

Section III. LOGISTICAL PROCEDURES AND ESTABLISHMENT OF INSTALLATIONS IN THE AIRHEAD

93. SUPPLY PHASE

Supply operations within an airhead are divided into three phases, as follows:

a. Assault Supply Phase. Consists, in the main, of supplies which accompany the assault forces; that is, dropped into the airhead by parachute or free fall or landed in assault aircraft. During this phase the unit will be responsible for recovery and distribution of supplies, although additional service units will be phased in as rapidly as possible to free combat troops for primary duty.

b. Follow-up Supply Phase. Consists, in the main, of initial resupply by air with the recovery or unloading and distribution being accomplished by the airborne unit assisted by such service units as have arrived in the airhead.

c. Maintenance and Build-up Supply Phase. Includes those supplies which are air-landed for the force as a whole to satisfy its needs and to build up the required level of supply in the airhead.

94. ASSAULT SUPPLY PHASE

a. Subordinate units of assault airborne divisions recover all supplies which accompanied the unit, other than those carried by individuals and combat-loaded vehicles, and establish battalion and regimental supply points.

b. Assault airborne divisions recover all accompanying supplies transported under division control and establish division supply points. Normally these are limited to classes I, III, and V supply points, under control of the division quartermaster and ordnance officers. These supply points are established in the vicinity of the landing areas on which the quartermaster and ordnance units land; they are incorporated in a division maintenance or service area. Service units of the division are phased in as rapidly as air lift

permits in order that combat elements may be relieved of logistical duties and displace forward to engage the enemy—their primary function.

95. FOLLOW-UP SUPPLY PHASE

Normally these supplies are delivered to assault airborne divisions at centrally located landing areas. These areas usually are the ones on which the division service units landed. The division quartermaster normally supervises the receipt, recovery, and movement of these supplies to establish division supply points. He has available the quartermaster company, augmented by personnel from the ordnance company. Normal division supply point distribution is established thereafter. When the tactical situation dictates delivery of follow-up supply to isolated subordinate units of the assault airborne division, the units recover that supply.

96. MAINTENANCE AND BUILD-UP SUPPLY PHASE

a. Supply procedures used during this phase closely parallel those used in normal situations. Army-type supply points and depots are established, units requisition in the normal manner, and stock control records are maintained. When practical, some modifications to normal distribution practices are made. If airfields are available, supplies may be delivered directly from rear air bases to using units. In some cases where airfields are not available, supplies may be delivered to using units from rear air bases by heavy drop techniques.

b. Aerial ports are established at airfields in the airhead to receive, unload, classify, and deliver supplies to depots, supply points, and units. These ports also load personnel and equipment which are to be evacuated from the airhead. In order to clear the airfields, a separate intransit area may be established a short distance from each field. Supplies which accompany follow-up units during this phase are unloaded from aircraft by the aerial ports and moved directly to unit assembly areas.

97. SUPPLY INSTALLATIONS

a. Assault. During this phase, only assault and follow-up supply are available to assault airborne units. Units of division size and smaller establish supply points. No corps or army supply points are in operation during this phase.

b. Consolidation. Army establishes supply points in one or more maintenance areas within a centrally located service area. Neces-

sary service units for supply and maintenance requirements within army maintenance areas are brought into the airhead to perform their specific functions. The number and type of service units vary depending on the size of the army. See appendix XVI for a schematic diagram of an army airhead showing the army service area.

c. Exploitation. During the exploitation phase, additional supply points are established to meet the expanding logistical requirements. Operation of army supply points is in accordance with principles and procedures specified in FM 100–10.

98. EVACUATION AND HOSPITALIZATION

a. Order of Arrival. Nondivisional medical units arrive in the following order:

(1) Mobile army surgical hospitals.

(2) Holding battalions.

(3) Evacuation hospitals.

(4) Supporting services.

b. Operations. Initially, mobile army surgical hospitals attached to assault divisions assist organic medical battalions in holding and treating casualties until they can be evacuated to holding battalions and evacuation hospitals. Holding battalions, which arrive in the airhead during the latter stages of the assault phase, receive all casualties from mobile surgical hospitals and evacuate them to aircraft when air evacuation becomes possible. Later they receive casualties from evacuation hospitals, hold them near airfields, and evacuate them to airplanes. Evacuation hospitals receive, hold, and treat casualties before evacuating them to holding battalions. Civilian casualties are treated by medical units when necessary, but are not normally evacuated.

c. Evacuation Policy. The evacuation policy is flexible, depending on the number of casualties and the holding capacity of the medical units, and is normally about 7 days.

99. CONTROL OF CIVILIANS, MILITARY GOVERNMENT

Military government operations of an airborne force include—

a. The necessary control to prevent civilian interference with the military mission.

b. Utilization and protection of civilian economy to conform to Geneva Convention agreements.

c. Restoration of civilian economy at the earliest practical time in order to further national policy.

100. TRANSPORTATION

The transportation operations of an airborne force normally include movement control, operation of a highway transport pool, and clearance of airfields.

a. Movement Control.

(1) Movement control includes control over movement of troops and supplies into the airhead as well as within the airhead.

(2) Movement control into the airhead is normally transferred from G3 to G4 supervision at such time as the area is sufficiently secure that troops are no longer required to go directly into combat. Control of forward movement insures coordination between troop carrier and the aerial ports headquarters to enforce the established priorities, promote efficient operation, and insure rapid unloading of airplanes.

(3) Control of movements by G3 is based on the movement plan prepared under his supervision. Control of movements by G4 is based upon the movement plan developed by him at periodic meetings when all interested parties present their requirements for transportation. Based on these requirements, G4 allocates the available air and truck lift and establishes priorities.

(4) Maximum utilization of returning airplanes for evacuation of casualties, prisoners of war, and civilians is secured through control of return movements.

(5) Movements control within the airhead, by routing and scheduling movements, makes possible the most effective utilization of the limited transport and insures realization of the priorities established by the commander.

b. Highway Transport Pool. The highway transport service normally consists of transportation truck companies and such civilian motor vehicles as are available and usable. It provides a pool of highway transport for movement of troops, supplies, prisoners of war, and evacuees within the airhead.

c. Aerial Ports Operations.

(1) In corps or army independent-type airborne operations there is a need for the continuous operation of landing fields as terminals of the air lines of communications. An aerial port is established at each landing field where the volume of supplies, equipment, and personnel demands. At other airfields, such as those used for the delivery of supplies directly to divisions, where the volume does not warrant an aerial port organization, necessary

service units are provided to unload supplies from aircraft and move them from the airfield.

(2) The aerial ports are flexible organizations whose duties are—

(*a*) Unloading supplies and equipment from aircraft.

(*b*) Establishing and operating intransit areas for the classification of supplies.

(*c*) Moving supplies to maintenance areas, supply points, and units.

(*d*) Loading aircraft with supplies, equipment, and personnel to be evacuated from the airhead.

(3) The number and type units assigned to any particular port will vary with the strength in the airhead, the number of airfields used, and the type aircraft being employed in the operation. Normally units of the following types will be included:

(*a*) Headquarters for the aerial port.

(*b*) Aerial port companies or battalions.

(*c*) Transportation truck companies or battalions.

(*d*) Labor organizations such as quartermaster service companies.

(*e*) Military police units to control traffic and enforce law and order in the vicinity of intransit areas and to provide necessary protection of supplies until delivered to destination.

(*f*) Quartermaster aerial supply companies to package and eject aerial supply.

(*g*) Supply detachments from the various services as necessary.

(*h*) Necessary maintenance and communication units.

(*i*) Necessary Counter Intelligence Corps personnel for security.

(4) When more than one aerial port is used, it becomes necessary to have an over-all agency to supervise and coordinate the activities of the various ports. This agency is called the aerial ports headquarters. The duties of the aerial ports headquarters are—

(*a*) Planning the operations of the aerial ports.

(*b*) Coordinating with troop carrier on the selection of airfields to be used for supply and evacuation.

(*c*) Balancing personnel and equipment among the different ports to meet varying work loads.

(*d*) Supervising port activities to eliminate bottlenecks and expedite the flow of supplies and matériel through the airfields.

(*e*) Providing and, if necessary, operating communication facilities required for the successful operation of the aerial ports system. This includes facilities from the airhead to the rear area which is supporting the operation.

(5) The aerial ports headquarters is under the operational control of the transportation officer on the staff of the senior commander in the airhead.

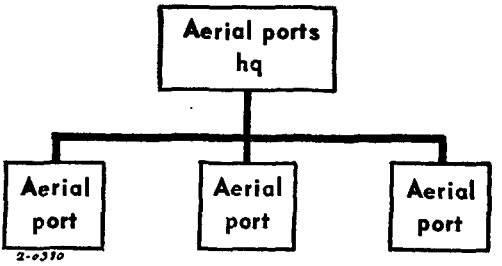


Figure 4. Organization of aerial ports in the airhead.

101. SERVICE

a. Service Troop List. Since transportation is the critical item in an airborne operation, the movement of service troops is balanced carefully against the movement of supplies.

b. Maintenance.

(1) Appropriate units of the technical services reassemble equipment dismantled for air movement.

(2) Field maintenance units in the airhead undertake as much maintenance as practicable.

c. Real Estate and Construction.

(1) The airborne force commander exercises strong centralized control over construction and the allocation of real estate in the airhead.

(2) Construction and repair in the airhead are restricted to the bare minimum required by military necessity because of the shortage of construction troops and matériel. Resources within the airhead are exploited to the maximum.

(3) Normal construction priorities are—

(*a*) Airfields.

(*b*) Roads and bridges.

(*c*) Prisoner of war enclosures.

(*d*) Repair of covered structures for supplies and shops.

(*e*) Other projects

(4) Engineer units, which may be aviation, combat or construction type units, will be provided for construction or rehabilitation and maintenance of airstrips and airfields and execution of other engineer missions in the airhead. These units will be specially equipped with air-movable construction equipment, and they will operate under the command of the senior commander in the airhead.

(5) Military government personnel attached to the airborne force coordinate with the force engineer in procurement and utilization of local resources exploited within the airhead.

102. LOGISTICAL CONTROL

a. Initially, control of logistical operations within the airhead is vested in the divisions. Requests for emergency logistical support are directed by the divisions to the corps advance headquarters. The function of corps on these requests is primarily to insure transmission to army and to make necessary decisions when conflicts between requests of the airborne divisions prevent fulfillment of all requirements.

b. As soon as practicable, advanced elements of army logistical staff and service units are established in the airhead for the purpose of relieving divisions and corps of logistical functions beyond their normal scope. As soon as such elements are established, normal channels are observed.

c. With the initiation of air-landed operations, the army service troop list is built in the airhead in accordance with the availability of aircraft and the need for the service involved.

d. All logistical requirements in support of the airhead are transmitted to the rear base which coordinates movement of supplies and personnel to forward airfields. During the latter part of the consolidation phase, the rear echelon of army headquarters completes its move to the airhead. At this time, requests from the airhead for supplies and the movement of personnel are transmitted to the rear. Movement is coordinated by the airborne force control group remaining at the rear base.

e. As soon as the tactical situation has progressed sufficiently to relieve the airborne commander of concern over logistical base operations in the airhead, a logistical command may be brought in by air to furnish the required support.

CHAPTER 5
MISCELLANEOUS

Section I. WEATHER AS A FACTOR IN AIRBORNE OPERATIONS

103. GENERAL

A requirement of airborne operations is the mass delivery of troops in a short period of time. To accomplish this, troop carrier forces must fly in close formation. In flying formation with present equipment, the pilot of each aircraft must maintain position and spacing from other aircraft in the formation by visual reference. If a formation were to fly into clouds, the visual relation between aircraft would normally be lost and would present an unacceptable risk of midair collision.

104. EFFECTS OF ADVERSE WEATHER ON AIRBORNE OPERATIONS

a. Adverse weather may—

(1) Prevent the air forces from completing preliminary missions essential to preparing the proposed airhead for the assault.
(2) Curtail training for the operation.
(3) Delay marshalling of troops and matériel.
(4) Require provisions for special types or unusual quantities of clothing, lubricants, food, and other matériel.
(5) Necessitate postponements of the time of attack or even abandonment of the operation.
(6) Prevent take-off of airplanes at the time of attack or prevent air serials in flight from reaching the proposed airhead.
(7) Prevent troops landed in the airhead from accomplishing their mission or delay them to such an extent that the success of the operation is jeopardized.
(8) Prevent or delay supply, reinforcement, or both, of units in the airhead.

b. Measures for minimizing adverse effects of weather on airborne operations are—

(1) Make a study of the weather conditions likely to prevail during the proposed operations, both prior to and after the anticipated time of attack, as early as practicable in the planning stage. The study should include an analysis of the possible effects of the forecasted weather on all phases of the contemplated operations to determine the over-all feasibility of the operation from the weather viewpoint, to select an advantageous time of attack, and to determine countermeasures to offset the effects of anticipated adverse weather.

(2) Develop a plan for continuous acquisition of weather information.

(3) Establish and maintain close cooperation between personnel of the Air Weather Service and appropriate staff sections concerned in the operations.

(4) Establish minimum acceptable weather requirements early in the planning stage in order to assist commanders in making decisions relative to launching the operation.

105. WEATHER MINIMUMS

a. Since formations cannot fly through clouds, weather minimums (the worst acceptable weather) are specified which will allow *full-scale participation* by all forces involved. The weather minimums specified are the composite requirements of the several forces. Parachute elements of airborne troops specify the strongest acceptable surface wind in the objective area and troop carrier and supporting fighter forces will specify the minimum ceiling (the vertical distance in feet between the lowest clouds and the terrain) and visibility (the maximum horizontal distance in miles at which terrain features can be seen) which must prevail over the air-movement routes and in the objective area. At the time the operation is to be launched, the weather conditions prevailing must be equal or better than the weather minimums specified by the participating forces. If the weather conditions are less favorable than the specified minimum, the operation must be delayed to await more suitable weather, or must be canceled.

b. The factors that influence weather minimums for airborne operations are as follows:

(1) Urgency of the mission.

(2) Training level of the troop carrier and supporting air forces.

(3) Navigation aids available to the troop carrier force (including pathfinder and radar navigation equipment).

(4) The terrain over which the air movement is routed.

(5) Surface winds which affect parachute landing casualties.

c. Specific weather minimums will be announced by the troop carrier commander based upon the situation as it exists at the time of each airborne operation. The figures set forth below are generalizations based upon present air capabilities which are suitable for instructional purposes. For airborne operations the minimum acceptable weather conditions en route and in the objective area are—

(1) No clouds within 2,000 feet of the ground.

(2) Visibility of 6 miles or more.

(3) Wind less than 20 miles per hour in the objective area from the surface to 1,000 feet.

106. NAVIGATIONAL AIDS

By using modern navigational aids in the departure area and in the objective area, troop carrier forces can continue the delivery of supplies by parachute and air-landing under weather conditions less favorable than the minimum requirements for mass delivery. In this type of operation, single aircraft, carefully controlled and spaced by intervals along routes, may fly to and from the objective area under instrument conditions. These airplanes can land and take off at a rate of one airplane every 5 minutes when the ceiling is 200 feet and the visibility is one-half mile.

107. FUTURE DEVELOPMENTS AND TRAINING

It can be expected that—

a. The Air Force will continue to improve equipment, technique, and training standards for all-weather flying. This study has a high priority since all phases of air operations are affected. Future improvements may result in the attainment of all-weather flying capability. When this occurs, it may be that weather requirements for an airborne assault may be reversed, that is, adverse weather rather than clear weather may be desired.

b. The Air Weather Service will continue to improve the accuracy of its forecasts. Aerial weather reconnaissance is being expanded, and extended period forecasting techniques are improving.

c. More complete orientation of commanders and their staffs in the appreciation of weather factors in planning operations will be accomplished through training courses and advice from more ex-

perienced and more highly trained meteorology personnel in all major echelons.

Section II. TRAINING OF AIRBORNE FORCES

108. GENERAL

a. Special Training. Airborne operations demand special training, both as regards movement by air and the airborne assault. Army forces must acquire ability to use air transportation for movement into combat while conducting preparations for their ultimate role on the ground.

b. Training Responsibilities.

(1) The Air Force is responsible for providing the Army with necessary facilities for air training and rehearsals and for conduct of training of Air Force units.

(2) The Army is responsible for the conduct of airborne and ground training as required in preparation for an airborne mission.

c. Scope of Training.

(1) *Army.* Army airborne training includes—

(*a*) Individual technique.
(*b*) Instruction of necessary specialists.
(*c*) Planning for staffs.
(*d*) Logistical operations.
(*e*) Unit tactics.
(*f*) Technique in loading and using aircraft.
(*g*) Maneuvers.
(*h*) Ground training for assault.
(*i*) Rehearsal.

(2) *Air Force.* The training of Air Force personnel for airborne operations includes—

(*a*) Technique of formation flying including execution of mass parachute drops, and assault aircraft landings.
(*b*) Instruction of necessary specialists.
(*c*) Planning for staffs.
(*d*) Logistical operations.
(*e*) Individual flight technique.
(*f*) Maneuvers.
(*g*) Rehearsal.

109. AIRBORNE UNITS

a. Training Objective. The training objective for airborne units is attainment of maximum combat efficiency in airborne assault.

Airborne units must be capable of planning airborne assault operations, including the execution of missions by day or by night, on the corps level. Parachute and assault aircraft elements must be capable of operating with other ground units, naval or seaborne forces, troop carrier units, and cooperating combat aviation.

b. Scope of Training.

(1) The individual must first be qualified for landings by parachute. This qualification should be accomplished at a specially designated school.

(2) After qualification, the individual must receive continued training in parachute jumping; flight discipline; loading for safe flight of equipment for delivery by parachute or power aircraft; and the methods and problems of assembly after landing. This training is in addition to normal ground training.

c. Unit Training. Unit training is the same as that for any ground organization except that training includes loading of cargo aircraft for safe flight, assembly after landing, briefing methods, and familiarization with airborne tactics.

d. Planning. Commanders, staffs, and key noncommissioned officers must be proficient in preparation of essential plans and data for the conduct of airborne operations. This includes—

(1) Technique of preparing operation orders.
(2) Preparation of air movement forms.
(3) Conduct of marshalling.
(4) Compositions and functions of airborne, overland, seaborne, and air follow-up echelons.

e. Combined Training. The object of combined training is to produce a unit capable of commitment to combat by parachute or powered aircraft. Combined training includes command post exercises and combined parachute and assault aircraft problems covering the following subjects:

(1) Briefing methods.
(2) Marshalling.
(3) Loading and enplaning.
(4) Flight.
(5) Landing and assembly.
(6) Subsequent movements.
(7) Supply and maintenance.

110. AIR-LANDED UNITS

a. Training Objective. Army units must be so trained that they will be capable of moving by aircraft by day or night, either in a

combat role or in an administrative movement. Each unit must be prepared to enter combat, with only air-landed equipment, immediately on landing or after further foot, rail, sea, or motor movement.

b. Scope of Training.

(1) The individual must be psychologically prepared for aerial flight; must be proficient in rapid entry into aircraft, stowage of equipment, and exit from aircraft; and must have a knowledge of what air discipline entails, including the procedure to be followed in event of an emergency.

(2) Senior commanders and staff officers must be familiar with tactical and technical procedures involved in an air-landed operation including necessity for deletion, substitution, or both, for equipment that is not air-transportable by available aircraft.

(3) Small-unit commanders and key noncommissioned officers must be proficient in air and army unit planning methods and use of aircraft flight forms; must be qualified to determine flight stability of each loaded airplane, and to load, lash, and unload heavy and critical items of equipment; must be familiar with expected action of air-landed units prior to take-off and after arrival in combat areas; must be able to efficiently organize departure areas and airheads; and must fully understand and attain flight discipline.

c. Sequence of Training. Air-movement training can usually best be presented in the following order:

(1) General orientation and indoctrination of senior troop commanders and principal staff officers by key personnel who have previously been prepared to conduct the course of instruction.

(2) Schools to develop additional instructors and to prepare specialists, such as air liaison, loading and traffic control officers, and key service personnel.

(3) Basic individual and group instruction.

(4) Unit training to include practice loading and unloading of heavy equipment.

(5) Small-unit flight exercises.

(6) Senior-unit command post exercises to rehearse staff planning.

(7) Complete rehearsal involving major unit for which sufficient aircraft is available.

d. Training Environment. Although a perfect training situation rarely exists, a well-qualified instructional team, suitable training aids, and a training area near airfields where cargo aircraft can be based, are requirements for efficient air-movement training. Mock-ups of, or damaged, aircraft fuselages can be used for preliminary training but are normally inadequate for a complete course of instruction in loading, lashing, and unloading of equipment.

e. Training Time Requirements. If a suitable training environment, a capable staff, and pressure of a pending operation are all present, any standard army unit of battalion size can normally be prepared to make an efficient air movement in a period of 10 training days. Thereafter, to maintain an acceptable standard of training, frequent repetition of the instructional phases is essential.

111. TROOP CARRIER FORCES

a. Activation and training of troop carrier units closely parallels that of units of the army. The troop carrier wing is the basic unit for activation and training.

b. (1) Wing and group staffs are selected prior to activation and sent to air force small-unit staff schools for training.

(2) Upon activation, the wing receives its cadre and a designated portion of the total strength and equipment to begin training as a unit.

(3) Training progresses in the following steps: individual, small-unit, squadron, and group phases until the unit is prepared for joint airborne and troop carrier training. Additional increments of personnel and equipment are phased into the wing so that it reaches 100 percent strength in men and equipment prior to participation in these joint training exercises.

(4) Exercises and maneuvers with airborne troops, under conditions approximating those expected in combat, complete wing training and preparation for movement to a theater of operations.

(5) Individual qualifications for troop carrier pilots and other air crew members are established in instructions issued by appropriate Air Force headquarters.

(6) One or more troop carrier wings may be selected for additional training as pathfinders. This requires the installation of special electronic devices for precision navigation in all airplanes and training of crews in the operation and maintenance of these devices.

(7) Upon arrival in a theater of operations, troop carrier units require an additional training period to become adapted to operating conditions peculiar to that theater. Rehearsals for specific operations, improvements in technique, and maintaining high standards of proficiency require continuous training throughout the active life of the unit.

c. The minimum period required for the activation, training, and preparation for movement to a theater of operations of a troop carrier wing is approximately 10 months. Individuals such as pilots, crew chiefs, radio operators, navigators, and other technical specialists receive intensive training within the Air Force training command for periods up to 9 months before assignment to troop carrier units.

d. Commanders and staffs of higher headquarters are selected and trained in the same manner as equivalent Army units.

112. JOINT TRAINING

a. Training programs for joint Army-troop carrier forces must be agreed upon and coordinated between the appropriate Air Force and Army headquarters.

b. Both Air Force and Army units must have completed certain preliminary training before they engage in joint training.

(1) Troop carrier units must have completed group training.
(2) Army units must have completed the combined training phase and preliminary training on air movement.
(3) Airborne units must have had participation of troop carrier personnel throughout all phases of training, including airborne schools.

c. Training exercises and tests should be conducted during each phase to ascertain progress. The final test should determine the ability of the joint force to perform its primary mission in a combat theater. This test, on a divisional scale, must include day and night operations of sufficient duration to insure a high standard of proficiency and includes supply, evacuation, and air movement of reinforcing troops and their equipment.

113. PATHFINDER TRAINING

a. Training Objective. Selected airborne and Air Force personnel are trained to precede an airborne force to the landing areas for the following purposes:

(1) To establish navigational aids for troop carrier aircraft formations to insure accurate delivery of airborne forces.

(2) To assist with the ground assembly of troops after landing.

(3) To land on proposed advanced landing fields in forward areas and to survey the fields and report the possibility of landing troops, equipment, and supplies.

(4) To be capable of assisting aircraft in the initial echelon to land at advance landing fields. This is accomplished by giving instructions, pointing out obstacles to landing, and acting as flying control personnel until relieved by Air Force personnel.

(5) To be capable of removing obstacles from advanced landing fields by the use of demolitions and pioneer hand tools.

b. Scope of Training. To accomplish the training objectives, airborne pathfinder personnel must be proficient in—

(1) Fundamentals of communication and procedure.

(2) Technical theories, principles, and technique of employment of specialized communication equipment to include radar, radio, and visual aids to aircraft navigation and assembly of troops.

(3) Technique and procedures for surveying and reporting airfields.

(4) Selecting and marking drop zones and landing zones.

(5) Principles and techniques of air supply.

(6) Aircraft ground control procedure.

(7) Demolitions.

(8) Combat intelligence.

(9) Map and air photo reading.

c. Training Responsibilities. Airborne and Air Force pathfinder teams should be trained jointly in order that the respective duties of each will be well coordinated in a joint operation.

114. TRAINING OF SPECIALIST UNITS

a. In airborne operations there are many teams, parties, advance detachments, and units which may be required to land by parachute or assault aircraft under assault conditions. This personnel should be given appropriate training and its equipment or organization modified if necessary.

b. Tactical air control parties, naval gunfire spotting and liaison teams, and similar units which land with the assault troops should be given parachute training. They are also trained to load and unload vehicles and large radios into and from aircraft.

c. Units whose equipment is bulky but essential should be given special training in the disassembly, loading, lashing, and unloading of such equipment. Engineer units, air defense units, and radar units, particularly, may be involved in such training.

d. The training can be accomplished by—

(1) Attachment to an airborne division.

(2) An airborne training center.

(3) Traveling airborne instructional teams.

Section III. SIGNAL COMMUNICATION-AIRBORNE FORCES

115. GENERAL

a. A general knowledge and understanding of the disposition of the units engaged in airborne operations in the departure areas and in the airhead, of the tactical employment of units during the execution of their mission, and of the necessary coordination with other army and air force elements during operations, is essential in determining the requirements for each of the signal communication activities and in planning the various signal communication systems to meet these requirements.

b. The mission of airborne signal units is to furnish necessary channels of communication including—

(1) Installing, operating, and maintaining a communication system at the rear base.

(2) Establishing direct radio contact from the rear echelon to the combat echelon and arranging for as many alternate means of communication as possible with the equipment provided.

(3) Maintaining a complete communication system in the combat echelon.

(4) Installing and maintaining communication between the airborne unit and coordinating or supporting units not provided with organic signal personnel. Communication between supporting air units and airborne units is a responsibility of the Air Force.

c. Joint signal communication comprises all those means required to link land, naval, and air elements of an attacking force prior to and during the actual airborne operation.

d. Communication difficulties inherent in airborne operations are due to—

(1) The joint nature of the operation.

(2) Necessity for great dependence on radio.

(3) Limitations as to the availability of transportation.

e. In planning the employment of communications facilities, signal officers should consider that, once the airborne operation has commenced, changes in plans or execution will be difficult. Alternate plans of action must be known sufficiently in advance to permit rearrangement of communication personnel in various aircraft and serials in such a way that they can effectively accomplish their mission in execution of alternate plans.

f. When the necessary personnel of the airborne division signal company have been landed in the combat area, their functions differ little from those of the personnel of an infantry division signal company. The main differences are because of limitations in the number of personnel, the amount and types of signal equipment, and the amount of motor transportation that can be carried by available aircraft.

g. Requirements of signal communication training are exacting and time-consuming. Airborne signal personnel must be trained in the specialized tactics and techniques of airborne operations.

h. In general, the signal operations and installations of follow-up air-landed forces are the same as for any army unit. The tendency is for airborne signal equipment to approach that prescribed for corresponding army units as the carrying capacity of airborne transport increases.

116. SIGNAL COMMUNICATION PRINCIPLES FOR AN AIRBORNE OPERATION

The following are the guiding principles for use of signal communication facilities in airborne operations:

a. All available means of communication are used to the maximum with priority to command channels.

b. All communication facilities controlled by Air Force headquarters are available to the commanders of the airborne force or their representatives on a common-user basis.

c. Full use is made of liaison officers with radios to maintain contact between headquarters.

d. Thorough coordination and briefing of all personnel, including supporting combat aviation, troop carrier forces, higher headquarters and lateral and follow-up ground units, is a vital means of insuring the proper use of a large number of channels of communication in the integrated system required.

e. Airplane messenger service, using high performance and Army aircraft, is established as soon as possible.

f. Alternate or duplicate channels and routes of signal communication are basic to insure positive and continuous communication.

g. To insure radio contacts, provisions must be made for relaying of messages.

h. Essential communication personnel must move in the first air serials and, in general, all subsequent signal units precede the echelon they serve.

117. APPLICATION OF SIGNAL COMMUNICATION ACTIVITIES TO AIRBORNE OPERATIONS

a. General. Signal units in airborne operations experience the following difficulties:

(1) Because of the wide dispersion of airborne assault forces on landing, rapidity of action, and distance involved, signal communication is relatively difficult to establish.

(2) Reliance must be placed to a major degree on radio.

b. Related Air Force Signal Communication Provisions. There are certain communication provisions made by Air Force elements which have an important bearing on signal communications for an airborne operation.

(1) The troop carrier command establishes an advance command post for liaison and coordination jointly with the tactical air force and the airborne force in the objective area during the initial phases. Radios are used for control of traffic and for point-to-point communication with the airhead. They may be used in conjunction with an airborne radio retransmission if necessary. Troop carrier headquarters and the departure fields are kept informed on developments in the airhead. Information concerning changes in flight schedules, and other matters, may be transmitted to the advance command post.

(2) For air warning information and for flight instructions, troop carrier headquarters is connected with the tactical air control center. A monitor on the tactical air control center broadcast channels provides necessary air warning contact.

(3) Air Force units may place radio range and radar beacons, flashing lights, smoke signals, and panels to mark the airborne route over friendly territory. The front lines also may be marked with these aids.

c. Communication During the Marshalling Period.

(1) Communication during the marshalling period is prima-

rily over facilities provided by troop carrier and theater. These facilities include radio, wire, and radio relay; and telephone, teletype, and facsimile, and messenger.

(2) In order to facilitate handling of traffic, close liaison is maintained between communication centers of the airborne unit and those operated by troop carrier.

(3) Telephone, teletype, and auxiliary radio channels must be maintained between the airborne headquarters in the rear area and the temporary headquarters in the departure area in order that messages may be promptly relayed.

(4) The amount of signal communication required to control the dispersed elements of the command in the several departure areas depends on—

(*a*) The length of time various elements are to be in the several marshalling camps.

(*b*) The signal facilities of the Army and Air Force forces that are available in the marshalling areas.

(*c*) The possibility of establishing a permanent rear echelon at the departure area.

(*d*) The requirements for signal communication to points of troop arrival and departure.

(*e*) The availability of personnel and equipment which are not to be sent into the airhead immediately.

(5) Short lines from the airborne command posts to the facilities already installed may have to be provided by subordinate units. If new wire construction is required, it should be planned and installed well in advance of the actual need.

(6) Existing facilities must be used to the maximum.

d. Communication During the Air Movement. During this period airborne forces are passengers. Any communication to, from, or between them should be under air force direction and routed via air force communication channels. Normally, however, radio silence is maintained during this period.

e. Initial Assault. During this period, in addition to the signal communication for normal ground action, special provisions must be made for pathfinder communication, individual and small-unit assembly, and communication with widely separated airborne or other Army forces with a common or coordinated mission.

f. Active Consolidation and Exploitation. In this period airborne forces signal communication is the same as for normal ground operations.

118. SIGNAL REPAIR AND SUPPLY

a. Signal officers must take positive action to insure that loading plans give proper priority to signal equipment. A suggested priority is—

(1) Equipment necessary immediately upon landing.

(2) Equipment for early expansion of the communication system.

(3) Essential administrative facilities for the unit.

(4) Airfield equipment.

(5) Reserve supplies and remainder of organizational equipment.

b. Aircraft loading plans should provide for distributing signal equipment and personnel so as to minimize the effect of losses and insure communication with all commands.

c. It is necessary to include a liberal supply of spares of major items of signal equipment.

d. It is probable that equipment normally issued will not adequately provide for many signal missions which may be assigned. Additional facilities must then be obtained through coordination with the staff and with higher authority. The primary requisite is to have all equipment necessary to provide the commander with the signal communication that he requires.

e. The signal repair that is practical for any given operation is often necessarily limited to organizational maintenance. Usually, field maintenance as provided by the airborne signal company will be limited to a few small signal repair crews. The balance of field maintenance must be accomplished by the issue of replacement equipment or components thereof.

Section IV. AIR-LANDED UNITS

119. GENERAL

The principal problems confronting the commander of an air-landed unit are—

a. Determining equipment that is air-transportable, that which requires modification or dismantling, and that which must be left with the rear or follow-up echelons or for which substitutions must be made.

b. Eliminating personnel and equipment not required in the objective area.

c. Determining an air movement plan that is within the capabilities of the aircraft allocated for the operation.

d. Maintaining tactical integrity of units.

e. Determining priority of movements.

f. Specialized training.

120. EQUIPMENT

Characteristics of cargo planes impose certain limitations on equipment that can accompany air-landed units on operations. The most important distinction in air-landed equipment is that between equipment which requires dismantling for transport by air and equipment that does not. The need to dismantle increases the time taken in loading and unloading. If modifications to equipment are necessary in order to facilitate loading or in order to simplify dismantling, these modifications must be completed before the equipment arrives at the airfield for loading. It is often necessary to scale down organic equipment which exceeds maximum weight or cubage standards for air transport; this frequently requires substitutions of equipment.

121. PERSONNEL

The commanders of air-landed units will normally be forced to trim personnel from their units because of shortages in aircraft. Such personnel will not be a part of the initial echelon of the air-landed operation and will be phased in by later air, sea, or overland movements. This personnel will generally be from units for which there is no immediate need in the objective area or from units with equipment not capable of being air-transported.

122. AIRCRAFT ALLOCATED FOR AIR-LANDED OPERATION

When the necessity or desirability for air transportation arises, preliminary steps must be taken by the headquarters ordering the air movement to determine if the operation is within the capabilities of aircraft, and if the aircraft of the desired types and the desired number can be made available. It is important that standard unit loading plans be prepared in advance and that they be sufficiently flexible to permit rapid changes based on the aircraft assigned for a particular operation.

123. TACTICAL INTEGRITY OF UNITS

The prime consideration in loading units is the anticipated tactical employment in the airhead. If the air-landed unit is to be com-

mitted relatively soon after arrival at destination, commanders must strive to maintain tactical integrity by plane loads. However, if the airhead is secure, tactical integrity may be sacrificed in order to attain the maximum use of the available aircraft.

124. PRIORITY OF MOVEMENT

Depending upon the tactical operation involved and the planes available for movement, certain priority of movement must be established. The airborne force commander will announce the over-all priority of movement of units. Initially the priorities will be based upon the planned requirement for combat units and supporting forces in the airhead. These priorities will also include the phasing of logistical support. During the actual operation the priorities may be modified to meet unforeseen changes in the original plans or tactical situation. Each unit commander must establish a priority of movement within his unit based upon the over-all plan and the allotment of aircraft to his unit. Priority of movement and scale-down are interdependent. This is particularly true in air movements extending over a number of days.

125. TRAINING PROBLEMS

Air movement is stressed, during unit training, as merely an expedient used to launch units into battle or as a means of phasing follow-up units into the airhead. Every effort must be made to conduct training in such a manner as to gain utmost speed in loading and unloading aircraft.

126. THE AIR-LANDED INFANTRY DIVISION

a. Factors. The mission and the availability of aircraft by type and by number are controlling factors when planning an air movement of an infantry division.

b. Missions. After an infantry division arrives in the forward area or in an airhead, the missions it may be assigned vary widely. The situation may require immediate commitment into combat piecemeal or it may allow a deliberate assembly and reorganization before commitment. The degree of mobility required may vary widely from that needed in a pursuit to that needed in a position defense. The enemy strength may require maximum fire power or only small-unit action.

c. Aircraft.

(1) The types of aircraft available directly effect the planning of the division. If, because of lack of airfields, the use

of assault aircraft is necessary, the division is presently restricted to use of equipment in the 16,000-pound class. This restriction removes all vehicles over 16,000 pounds, such as wreckers, tanks, and other tracked vehicles.

(2) Assault aircraft availability may be limited, which may require heavy reductions in the weights of each unit.

(3) If airfields are available for landing transports in the 16,000- to 20,000-pound class, the division can move larger tonnages, but the weight restrictions on individual items are about the same.

(4) If heavy transports of the 50,000-pound class can land, the division can move all essential loads except medium or heavy tanks. Since the availability of heavy transports would be limited, they would carry only critical loads which could not be moved by other aircraft.

d. Nonair-transportable Units.

(1) The tank battalion and the tank companies of the infantry regiments are not, at present, air-transportable. If light tanks are available as substitute equipment, those units and the division reconnaissance company may be transported in the heavy-cargo aircraft.

(2) The antiaircraft battalion is transportable in the heavy transport, and by substitution of towed weapons can be made air-transportable in 16,000-pound aircraft.

(3) The engineer battalion requires the heavy transport for its largest equipment. However, reasonably efficient substitute equipment can be carried in the medium transport.

(4) With the exception of isolated items of equipment, all other units in the division can be transported in medium aircraft.

e. Preliminary Planning. Preliminary planning is essential if any specific air movement is to be executed efficiently on short notice. A major task in this planning is the preparation of aircraft requirement tables showing all units of the division being moved by various combinations of aircraft. A typical group of tables would include one showing the division's requirements for movement so as to have maximum mobility and fire power. A second table might show the division's requirements for movement so as to have medium mobility and fire power. A third table might show the division's requirements for movement so as to have the absolute minimum in mobility and fire power. These tables would serve as the basis for adjustments due to increases or decreases in numbers of aircraft.

f. Scale-down. A division is allotted a daily number of aircraft sorties, by type, for an air movement on 1-day or a bulk assignment of aircraft over a period of several days. If, for example, the number of aircraft allocated is greater than preliminary planning has indicated necessary, certain units receive increases in aircraft. This allows transportation of additional vehicles, men, or supplies. Conversely, if the aircraft allocated is less than required, reductions must be made. If a serious shortage of aircraft exists which does not permit transport of necessary tonnages, the higher commander is notified and additional aircraft must be provided; the tactical plan must be modified; or a calculated risk is accepted. Scale-down is rarely applied to the division as a whole. Entire units may be deleted from the air movement, others given large reductions, and others scaled-down slightly. However, changes in supplies to be carried affect all units equally.

APPENDIX I
THE AIRBORNE DIVISION

1. GENERAL

This appendix shows the organization of the airborne division (fig. 5) and discusses the functioning of each unit of the division.

2. MISSION

The primary mission of the airborne division is to move by air into enemy territory and to seize and hold important objectives in order to block the movement of enemy reserves, to assist the advance of our own forces, or for similar purposes. The secondary mission of the airborne division is its employment in the role of an infantry division. The division, as organized under T/O&E 57, is comparable in strength to an infantry division and can be used for sustained combat. In the execution of its primary mission the division makes its assault landing by parachute or by a combination of parachute and assault aircraft. It is able to do this primarily by reason of special airborne and parachute training. The division does not normally require the use of airstrips; it can be landed and supplied entirely by parachute, or by parachute and assault aircraft.

3. ORGANIZATION OF THE AIRBORNE DIVISION

a. General. The division is composed of the arms and services necessary to permit seizure and defense of objectives for a limited period, depending solely on air supply. The organic units are trained for parachute and assault aircraft operations thus affording maximum flexibility.

b. Components.

(1) Division headquarters consists of the commanding general and the general and special staffs. It is similar to other type division headquarters in its composition and employment, and contains the necessary staff sections to direct and control the operations of the division.

(2) The division headquarters company provides personnel (less communication personnel) for the operation of the division command post. It furnishes quartering and messing facilities for division headquarters. A light aviation section permits command aerial reconnaissance and rapid messenger service. Pathfinder teams are included; they precede airborne assault forces with navigational aids to guide aircraft carrying the division to the proper drop or landing zones.

(3) The band provides music for ceremonies, social functions, and concerts, thus aiding the division in attaining and maintaining a high degree of *esprit de corps* and morale.

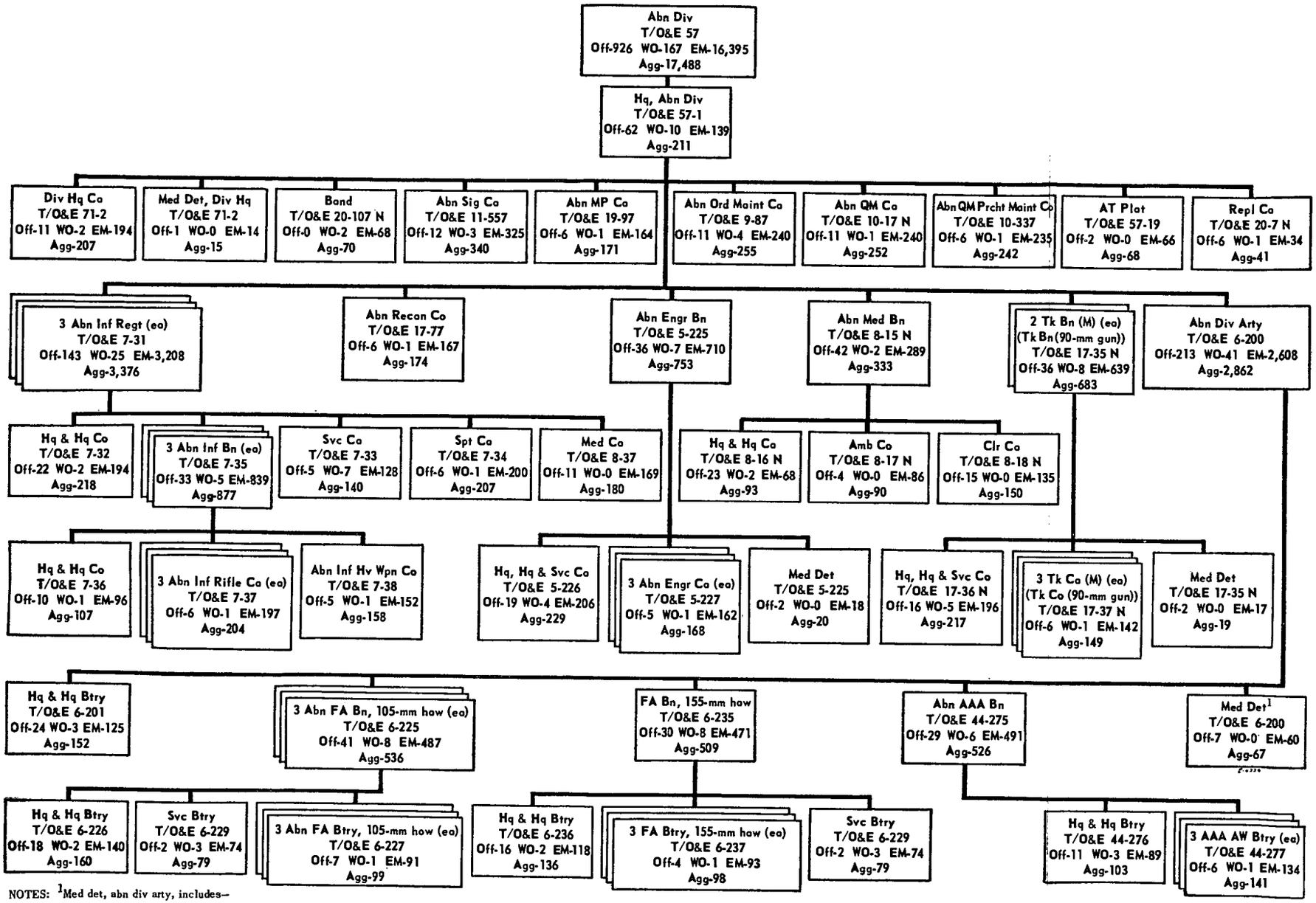
(4) The medical detachment, division headquarters, assisted as necessary by personnel from the medical battalion, provides first echelon medical service for all divisional troops not provided organic medical service.

(5) The signal company operates under the command of the division signal officer and performs Signal Corps functions within the division. Normally, this includes signal communication to the next lower echelon, to division rear echelon, and to troop carrier forces. Field maintenance of all signal corps equipment, signal supply, and photographic work are also responsibilities of this unit.

(6) The military police company enforces traffic regulations within the division area, maintains order, enforces military laws and regulations, protects property, handles prisoners of war, controls circulation, operates straggler lines, and supplements the local security of the command post.

(7) The division ordnance company stores and issues ordnance supplies, conducts maintenance support for all elements of the division, conducts technical inspections of ordnance matériel, and administratively controls ammunition supply in the division.

(8) The quartermaster company has the mission of providing food, fuel, clothing, quartermaster equipment, graves registration, bath, and limited laundry service for the division. In addition to the above it has primary responsibility for collecting and distributing air supply. Its organization is the same as the quartermaster company, infantry division.



NOTES: [1]Med det, abn div arty, includes—
Hq sec of 2 off, 11 EM.
3 FA 105-mm how bn sec of 1 off and 10 EM ea.
1 FA 155-mm how bn sec of 1 off and 10 EM.
1 AAA bn sec of 1 off and 9 EM.

Figure 5. Organization, airborne division.

(9) The quartermaster parachute maintenance company provides personnel and equipment to pack, maintain, and issue parachutes and allied equipment, and to supervise recovery of parachutes and containers.

(10) The antitank platoon provides antitank protection to the division headquarters or other elements as the division commander directs.

(11) The replacement company receives division replacements and casuals for indoctrination, training, and forwarding to units. The company may also process rotational and leave personnel of the division.

(12) The medical battalion provides medical and ambulance service to the division, to include dental service and medical supply.

(13) The engineer battalion increases the combat effectiveness of the airborne division by performing general engineer work.

(14) The mission of the airborne infantry regiment is the same as for any infantry regiment except that each airborne regiment is trained to enter combat by parachute and assault aircraft. A support company consisting of two heavy mortar platoons and an antitank platoon is organic to the regiment. The regiment has an organic medical company.

(15) The division artillery furnishes close fire support to neutralize or destroy targets which threaten the success of the supported infantry. Each howitzer battery has four howitzers. An antiaircraft battalion is incorporated in the division artillery, providing for organic air defense.

(16) Two medium tank battalions provide the airborne division with tank support. One of these battalions may be broken down to provide a tank company for each airborne infantry regiment.

(17) The reconnaissance company provides the division commander with a highly mobile unit for reconnaissance. It performs intelligence, counterintelligence, and security missions. It has sufficient strength, speed, mobility, communication, and fire power to contact the enemy, obtain information, and report information to the division commander.

c. Attachments. For any airborne operation, the division must have attached to it a certain number of complementary units. The exact number of units required depends upon the expected length of time before link-up or relief, the enemy situation, the attitude of civilians in the objective area, and the size of the total airborne force involved. In most situations the following units are attached to the division in the assault:

(1) One air liaison officer's party and twelve tactical air control parties.

(2) Two troop carrier combat control teams.

(3) One mobile army surgical hospital.

(4) A variable number of intelligence teams.

APPENDIX II

AIRCRAFT REQUIREMENTS—AIRBORNE DIVISION ASSAULT

1. GENERAL

a. This appendix shows aircraft requirements of the airborne division for—

(1) The airborne assault echelon with personnel and selected items of equipment landed by parachute and the remaining items of heavy equipment and personnel air-landed.

(2) The airborne assault echelon with all personnel and heavy equipment landed by parachute.

b. The data contained in the two tables are based upon the latest approved tables of organization and equipment, the latest aerial delivery techniques, and the following assumptions:

(1) *Allowable cargo load of aircraft:*

C–119 ---------- 16,000 pounds.
C–123 ---------- 16,000 pounds.
C–124 ---------- 50,000 pounds.

(2) *Weight of personnel:*

Parachutist ---------- 260 pounds.
Air-landed personnel ---------- 240 pounds.

(3) Vehicles carry sufficient gasoline for 300 miles' operation.

(4) Vehicles are computed at basic weight; that is, ready for operation but without cargo or crew.

(5) Three days of supply accompany all units, including follow-up echelon.

2. AIRCRAFT REQUIREMENTS

These tables are prepared for general planning purposes only and do not necessarily reflect the final echelonment of an airborne division in the assault. Tactical conditions may dictate an increase or decrease in the composition of each of the echelons. The final organization of the airborne division in assault must be solved in direct relation to a specific, planned operation.

3. TABLE I—DISCUSSION

a. This table shows aircraft requirements of the assault echelon which includes essential personnel and equipment of an airborne division required for the assault and subsequent defense of an objective area pending ground link-up or air reinforcement within 48 to 72 hours. The division is divided into an assault echelon, a follow-up echelon containing heavy equipment and additional personnel, and a rear echelon necessary to continue administrative functions and to prepare parachute equipment for future operations. The assault echelon is further divided into parachute and assault aircraft elements.

b. Personnel and major items of equipment only are shown in the table. Sufficient cargo space is available to load aircraft up to the allowable cargo load.

c. Artillery liaison parties, artillery forward observers, and attached teams are not assigned to specific aircraft. Sufficient spaces are provided within units to accommodate attachments dictated by the situation.

d. (1) Personnel and equipment assigned to the follow-up echelon may be landed in the objective area on D-day or shortly thereafter depending upon the situation, available landing sites, and the availability of aircraft.

(2) Two methods of delivery of the follow-up echelon are shown in columns 23 and 24. The first method (top line in blocks) reflects maximum use of medium aircraft with heavy aircraft used to lift only those items not transportable in medium aircraft. The second method (bottom line in blocks) reflects use of heavy aircraft only.

4. TABLE II—DISCUSSION

This table is identical to table I, except that the assault echelon is landed in the objective area by parachute. The assault echelon is divided into heavy drop and personnel aircraft elements.

Table I. Aircraft Requirements—Airborne Division—

1	2	ASSAULT ECH								
		3	4	5	6	7	8	9	10	11
Unit	Assault elms	Pers	Major items of equip							
			Trks ¼-ton	Trks ¾-ton	Trks 2½-ton	Tlrs ¼-ton	Tlrs 2-wheel 1-ton	Misc	Gun 76-mm	How 105-mm
Div and atch teams	Prcht	12,214	178	29		113			24	36
	Air-land	1,639	121	39	95	60	7			
Div hq, hq co and med det	Prcht	310	2			2				
	Air-land	69	9			6				
Band										
Abn sig co	Prcht	175	4			4				
	Air-land	96	12			4	4			
Abn MP co	Prcht	82								
	Air-land	34	6							
Abn ord maint co	Air-land	12	1			1				
Abn QM co	Prcht	74								
	Air-land	32	1		10	1				
Abn QM prcht maint co										
AT plat	Prcht	63	8 Trk ¼-ton sub for trk 2½-ton as prime mover 76-mm gun						6	
Repl co										
3 abn inf regt (total)	Prcht	9,060	75	27		75			18	
	Air-land	321	39	9	9	6	3			
Abn inf regt (ea)	Prcht	3,020	25	9		25			6	
	Air-land	107	13	3	3	2	1			
Hq and hq co	Prcht	171	7			4				
	Air-land	10		2						
Svc co	Prcht	94								
	Air-land	6			3					
Spt co	Prcht	154		6					6	
	Air-land	30	6							
Med co (−3 bn plat)	Air-land	61	7	1		2	1			
3 inf bn (+3 bn med plat) (total)	Prcht	2,601	18	3		21				

ASSAULT ECH						FOLLOW-UP ECH							REAR ECH		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Major items of equip				Acft rqmts			Major items				Acft rqmts			Major items	
How 155-mm	Gun 40-mm AA	Quad MG M-55	Total weight unit in S/T	C-119	C-123	Pers	Trk	Tlr	Misc	Total weight unit in S/T	C-119 or C-123	C-124	Pers	Trk	Tlr
12	24	24	4,864	409	199	1,802	1,452	998		4,998	506	27 189	615	37	32
			96	9	3	42	37	18	3 acft				12	4	4
													70		
			80	6	4	67	63	24					2	1	1
			32	2	2	53	43	8	6 mtrcl				2		
			8		1 Incl 12 pers, ¼-ton trk & tlr QM co	241	59	47	2 transporters M15A1 not incl				2		
			96	2	10	144	72	80					2		
													242	17	15
			48	6		5	5	5							
						14	1	1					27	3	3
			2,376	270	27	597	588	402	3 acft				150	12	9
			792	90	9	199	196	134	1 acft				50	4	3
			64	7 Incl 10 pers from svc co	1	29	29	14	1 acft				8	2	2
			40	2	3	38	38	35					2	2	1
			88	9	2	21	21	21					2		
			24		3	12	12	4					2		
			576	72		99	96	60					36		

		ASSAULT ECH								
1	2	3	4	5	6	7	8	9	10	11
			Major items of equip							
Unit	Assault elms	Pers	Trks ¼-ton	Trks ¾-ton	Trks 2½-ton	Trs ¾-ton	Trs 2-wheel 1-ton	Misc	Gun 76-mm	How 105-mm
Inf bn (+ bn med plat) (ea)	Prcht	867	6	1		7				
Abn recon co	Prcht	156	35			18		3 mtrcl M1		
Abn engr bn	Prcht Air-land	455 128	9 10		4	3 10		4 D-4 dozer		
Hq, hq and svc co engr bn + med det.	Prcht Air-land	107 50	3 4		1	4		1 D-4 dozer		
3 engr co (total)	Prch Air-land	348 78	6 6		3	3 6		3 D-4 dozer		
Engr co (ea)	Prcht Air-land	116 26	2 2		1	1 2		1 D-4 dozer		
Abn med bn	Prcht Air-land	126 140	20	4		10				
2 tk bn[a] (total)										
Tk bn (ea)										
Abn div arty	Prcht Air-land	1,672 750	45 19	2 26	72	11 18				36
Hq, hq btry and med det (−)	Prcht Air-land	90 38	4 4	4		4 2				
3 bn 105-mm how and med det (total)	Prcht Air-land	1,200 162	39	12	36	3 15		105-mm ammo		36
Bn 105-mm how and med det (ea)	Prcht Air-land	400 54	13	4	12	1 5		105-mm ammo		12
Bn 155-mm how and med det	Prcht Air-land	189 254	1 12	2 6	12	3		155-mm ammo		
Abn AA bn and med det	Prcht Air-land	193 296	1 3	4	24	1 1				
Hq, hq btry abn AA bn and med det.	Prcht Air-land	67 23	1	1		1 1				

ASSAULT ECH						FOLLOW-UP ECH							REAR ECH		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Major items of equip				Acft rqmts			Major items				Acft rqmts			Major items	
How 155-mm	Gun 40-mm AA	Quad MG M-55	Total weight unit in S/T	C-119	C-123	Pers	Trk	Tlr	Misc	Total weight unit in S/T	C-109 or C-123	C-124	Pers	Trk	Tlr
			192	24		33	32	20					12		
			128	16		16	16	19					2		
			216	18	9	160	116	91	See footnote[b]				10		
			48	3 19 pers load w/each engr co.	3	88	59	43	See footnote[b]				4		
			168	15	6	72	57	48					6		
			56	5	2	24	19	16					2		
			80	3	7	59	55	25					8		
						1,346	354	86	Tk bn not incl				20		
						673	177	43	Tk bn not incl				10		
12	24	24	1,688	77	134	374	367	248	10 acft				66		
			56	4	3	29	28	10	2 acft				8		
			936	60	57	243	240	156	6 acft				36		
			312	20 Ln parties load with inf regt.	19	81	80	52	2 acft				12		
12			328	7	34	65	63	44	2 acft				12		
	24	24	368	6	40	37	36	38					10		
			32	3	1	19	18	14					4		

Table I. Aircraft Requirements—Airborne Division—

		ASSAULT ECH								
1	2	3	4	5	6	7	8	9	10	11
			Major items of equip							
Unit	Assault elms	Pers	Trks ¼-ton	Trks ¾-ton	Trks 2½-ton	Tlrs ¼-ton	Tlrs 2-wheel 1-ton	Misc	Gun 76-mm	How 105-mm
3 AAA AW btry (total)	Prcht Air-land	126 273	3	3	24					
AAA AW btry (ea)	Prcht Air-land	42 91	1	1	8					
Total atch	Prcht Air-land	41 57	4			4				
ASA										
ASA ln (BF)	Air-land	2								
Intel										
IPW (BB)	Air-land	2								
Tltr (BF)	Air-land	2								
Intrpr (BJ)	Air-land	2								
Det CIC (AB–BB)	Air-land	12								
Civil affairs div										
Plat (AA, AE, CB, DA, EA, ED).	Air-land	21								
TACP (12)	Prcht	36								
AirLO team	Prcht	5								
Trp carr combat control team	Air-land	16	4			4				

[a] For acft rqmt for one tk bn when lt tk are substituted, see table III.

[b] One brg, 50-ton,—Air-transported if tac sit dictates. Requires 4—C–124 acft or 13—C–119 or C–123 acft.

Two cranes, trk-mounted ¾ cu yd, move overland.

One helicopter flies in or is towed in.

Assault Echelon (Parachute and Assault Aircraft)—Continued

ASSAULT ECH						FOLLOW-UP ECH							REAR ECH		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Major items of equip				Acft rqmts			Major items				Acft rqmts			Major items	
How 155-mm	Gun 40-mm AA	Quad MG M–55	Total weight unit in S/T	C–119	C–123	Pers	Trk	Tlr	Misc	Total weight unit in S/T	C–119 or C–123	C–124	Pers	Trk	Tlr
	24	24	336	3	39	18	18	24					6		
	8	8	112	1	13	6	6	8					2		
			16	Atch units load as directed with units of the div	2	30	30	30							
						1	1	1							
						1	1	1							
						1	1	1							
						1	1	1							
						5	5	5							
						8	8	8							
						12	12	12							
						1	1	1							
			16		2										

		ASSAULT ECH								
1	2	3	4	5	6	7	8	9	10	11
			Major items of equip							
Unit	Assault elms	Pers	Trks ¼-ton	Trks ¾-ton	Trks 2½-ton	Trs ¼-ton	Trs 2-wheel 1-ton	Misc	Gun 76-mm	How 105-mm
Div and atch teams	Pers acft Hv drop	11,202 2,651	299	68	95	173	7		24	36
Div hq, hq co and med det	Pers acft Hv drop	336 43	11			8				
Band										
Abn sig co	Pers acft Hv drop	207 64	16			8	4			
Abn MP co	Pers acft Hv drop	102 14	6							
Abn ord maint co	Pers acft Hv drop	8 4	1			1				
Abn QM co	Pers acft Hv drop	33 73	1		10	1				
Abn QM prcht maint co										
AT plat	Pers acft Hv drop	63	8 Trk ¼-ton sub for trk 2½-ton as prime mover 76-mm gun						6	
Repl co										
3 abn inf regt (total)	Pers acft Hv drop	8,646 735	114	36	9	81	3		18	
Abn inf regt (ea)	Pers acft Hv drop	2,882 245	38	12	3	27	1		6	
Hq and hq co	Pers acft Hv drop	145 36	7	2		4				
Svc co	Pers acft Hv drop	79 21			3					
Spt co	Pers acft Hv drop	128 56	6	6					6	
Med co (−3 bn plat)	Pers acft Hv drop	25 36	7	1		2	1			
3 inf bn (+3 bn med plat) (total).	Pers acft Hv drop	2,505 96	18	3		21				

Division —Assault Echelon (Parachute)

ASSAULT ECH					FOLLOW-UP ECH							REAR ECH		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Major items of equip				Acft rqmts		Major items				Acft rqmts			Major items	
How 155-mm	Gun 40-mm AA	Quad MG M-55	Total weight unit in S/T	C-119	Pers	Trk	Tlr	Misc	Total weight unit in S/T	C-119 or C-123	C-124	Pers	Trk	Tlr
12	24	24	5,016	627	1,802	1,452	998		4,998	506	27 189	615	37	32
			104	13	42	37	18	3 acft				12	4	4
												70		
			104	13	67	63	24					2	1	1
			40	5	53	43	8	6 mtrcl				2		
			8	1 Incl 3 pers, ¼-ton trk and tlr QM co	241	59	47	2 transporters M15A1 not incl				2		
			88	11 Incl 8 pers ord co	144	72	80					2		
												242	17	15
			48	6	5	5	5							
					14	1	1					27	3	3
			2,424	303	597	588	402	3 acft				150	12	9
			808	101	199	196	134	1 acft				50	4	3
			64	8 Incl 2 pers spt co	29	29	14	1 acft				8	2	2
			40	5	38	38	35					2	2	1
			88	11	21	21	21					2		
			40	5	12	12	4					2		
			576	72	99	96	60					36		

1	2	ASSAULT ECH 3	4	5	6	7	8	9	10	11
			Major items of equip							
Unit	Assault elms	Pers	Trks ¼-ton	Trks ¾-ton	Trks 2½-ton	Tlrs ¼-ton	Tlrs 2-wheel 1-ton	Misc	Gun 76-mm	How 105-mm
Inf bn (+ bn med plat) (ea)	Pers acft Hv drop	835 32	6	1		7				
Abn recon co	Pers acft Hv drop	42 114	35			18		3 mtrcl M1		
Abn engr bn	Pers acft Hv drop	479 104	19		4	13		4 D–4 dozers		
Hq, hq and svc co engr bn + med det.	Pers acft Hv drop	122 35	7		1	4		1 D–4 dozer		
3 engr co (total)	Pers acft Hv drop	357 69	12		3	9		3 D–4 dozers		
Engr co (ea)	Pers acft Hv drop	119 23	4		1	3		1 D–4 dozer		
Abn med bn	Pers acft Hv drop	194 72	20	4		10				
2 tk bn[a] (total)	Pers acft Hv drop									
Tk bn (ea)	Pers acft Hv drop									
Abn div arty	Pers acft Hv drop	1,073 1,349	64	28	72	29				36
Hq, hq btry and med det (–)	Pers acft Hv drop	84 44	8	4		6				
3 bn 105-mm how and med det (total)	Pers acft Hv drop	690 672	39	12	36	18				36
Bn 105-mm how and med det (ea).	Pers acft Hv drop	230 224	13	4	12	6				12
Bn 155-mm how and med det	Pers acft Hv drop	205 238	13	8	12	3				
Abn AA bn and med det	Pers acft Hv drop	94 395	4	4	24	2				
Hq, hq btry abn AA bn and med det.	Pers acft Hv drop	76 14	1	1		2				
3 AAA AW btry (total)	Pers acft Hv drop	18 381	3	3	24					

ASSAULT ECH					FOLLOW-UP ECH							REAR ECH		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Major items of equip				Acft rqmts		Major items				Acft rqmts			Major items	
How 155-mm	Gun 40-mm AA	Quad MG M–55	Total weight unit in S/T	C–119	Pers	Trk	Tlr	Misc	Total weight unit in S/T	C–119 or C–123	C–124	Pers	Trk	Tlr
			192	24	33	32	20					12		
			128	16 Incl 2 pers and 1 trk ¼-ton medbn	16	16	19					2		
			232	29	160	116	91	See footnote[b]				10		
			64	8	88	59	43	See footnote[b]				4		
			168	21	72	57	48					6		
			56	7	24	19	16					2		
			120	15	59	55	25					8		
					1,346	354	86	Tk bn not incl				20		
					673	177	43	Tk bn not incl				10		
12	24	24	1,704	213	374	367	248	10 acft				66		
			64	8	29	28	10	2 acft				8		
			888	111	243	240	156	6 acft				36		
			296	37 Ln parties load with inf regt.	81	80	52	2 acft				12		
12			312	39	65	63	44	2 acft				12		
	24	24	440	55	37	36	38					10		
			32	4	19	18	14					4		
	24	24	408	51	18	18	24					6		

1	2	3	4	5	6	7	8	9	10	11
		ASSAULT ECH								
			Major items of equip							
Unit	Assault elms	Pers	Trks ¼-ton	Trks ¾-ton	Trks 2½-ton	Trlrs ¼-ton	Trlrs 2-wheel 1-ton	Misc	Gun 76-mm	How 105-mm
AAA AW btry (ea)	Pers acft Hv drop	6 127	1	1	8					
Total atch	Pers acft Hv drop	82 16	4			4				
ASA										
ASA ln (BF)	Pers acft Hv drop	2								
Intel										
IPW (BB)	Pers acft Hv drop	2								
Tltr (BF)	Pers acft Hv drop	2								
Intrpr (BJ)	Pers acft Hv drop	2								
Det CIC (AB–BB)	Pers acft Hv drop	12								
Civil affairs div										
Plat (AA, AE, CB, DA, EA, ED)	Pers acft Hv drop	21								
TACP (12)	Pers acft Hv drop	36								
AirLO team	Pers acft	5								
Trp carr combat control team	Pers acft Hv drop	16	4			4				

[a] For acft rqmt for one tk bn when lt tk are substituted, see table III.

[b] One brg, 50-ton abn,—Air-transported if tac sit dictates. Requires 4—C–124 acft or 13—C–119 or C–123 acft.

Two cranes, trk-mounted ¾ cu yd, move overland.

One helicopter flies in or is towed in.

ASSAULT ECH					FOLLOW-UP ECH							REAR ECH		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Major items of equip				Acft rqmts		Major items				Acft rqmts			Major items	
How 155-mm	Gun 40-mm AA	Quad MG M-55	Total weight unit in S/T	C-119	Pers	Trk	Tlr	Misc	Total weight unit in S/T	C-119 or C-123	C-124	Pers	Trk	Tlr
	8	8	136	17 6 pers load with sptd units.	6	6	8					2		
			16	2 Atch units load as directed with units of the div	30	30	30							
					1	1	1							
					.1	1	1							
					1	1	1							
					1	1	1							
					5	5	5							
					8	8	8							
					12	12	12							
					1	1	1							
			16	2										

APPENDIX III

AIRCRAFT REQUIREMENTS—INFANTRY DIVISION

1. GENERAL

This appendix shows aircraft requirements of the infantry division for an air movement. These tables are prepared for general planning purposes only and do not necessarily reflect the final echelonment of an infantry division into an airhead. Tactical conditions may dictate an increase or decrease in the composition of each of the echelons.

2. TABLE III—DISCUSSION

a. This table divides the infantry division into an initial echelon to be air-landed on a secured landing area or in an airhead; a follow-up echelon to be transported over land, by sea or by air; and a rear echelon. The rear echelon contains equipment not air-transportable, and administrative elements from each unit.

b. The initial echelon includes minimum essential personnel and equipment required by an air-landed infantry division for initial action upon arrival in the airhead. The division may be required—

(1) To assist in expanding the airhead.

(2) To assume responsibility for a portion of the corps sector during the defensive phase.

(3) To act as an exploitation force or part of one.

(4) To act as a reserve.

In each instance listed above, it may be desirable to bring in all or appropriate portions of the follow-up echelon as soon as practicable, particularly in the case of (3) above.

c. The initial echelon includes the minimum essential equipment that can be carried in the C–119 or C–123 aircraft. Sufficient personnel, weapons and vehicles are included to allow the infantry division to operate with approximately the same degree of combat effectiveness in an airhead as the assault echelon of an airborne division.

d. The data included in the table are based upon the latest approved tables of organization and equipment and the following assumptions:

(1) Allowable cargo load of aircraft:

C–119	16,000 pounds.
C–123	16,000 pounds.
C–124	50,000 pounds.

(2) Weight of personnel: 240 pounds.
(3) Vehicles carry sufficient gasoline for 300 miles' operation.
(4) Vehicles in the initial echelon are computed at basic weight; that is, ready for operation but without cargo or crew.
(5) Weight of vehicles in the follow-up echelon includes the gross weight of vehicle less crew.
(6) Three days of accompanying supply are included in the initial echelon.

3. LOAD RESTRICTIONS

Certain cargo-carrying characteristics of the aircraft limit the types of equipment that can be carried.

a. Two combinations of loading of the follow-up echelon are shown in columns 20 and 21. Method 1 reflects maximum use of the C–119 or C–123 aircraft with the C–124 used to lift those items not transportable in the C–119 or C–123 aircraft. Method 2 utilizes the C–124 aircraft only.

b. The tank battalion (medium), the infantry regiment tank companies (medium), the service company tank maintenance sections, and the antiaircraft battalion are placed in the follow-up echelon because the medium tanks, the carriage, motor, multiple gun, M–16 and the carriage, motor, twin 40-mm gun, M–19, are not air-transportable in the C–119 or C–123 aircraft. If the light tank M–24 is substituted throughout, and the tank recovery vehicle omitted, the tank units can be air-landed. Aircraft requirements for these units are shown using C–124 aircraft and could be included in the initial echelon if C–124s could be landed.

c. To determine the number of C–124 aircraft required to lift the initial echelon, use weight method described in appendix IV.

d. There are two subtotals shown for some major units in column 13, aircraft requirements. The subtotal in parentheses shows the number of aircraft required when there is no mixture of personnel or equipment from different subordinate units in one aircraft. However, elements of different units within a battalion or regiment, when loaded in the same aircraft, may utilize some of the unused allowable cargo capacity. The subtotal preceded by an asterisk (*) reflects the number of aircraft required by utilizing this "cross-loading."

e. Sufficient usable payload is available for the loading of attached teams and therefore no additional aircraft are shown under division and attached teams.

Table III. Infantry Division, Air-Landed

1	INITIAL ECH												FOLLOW-UP ECH								REAR ECH			
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Unit		Major items of equip										Acft rqmt		Major items					Acft rqmt			Major items		
	Pers	Tlr ¼-ton	Tlr 1-ton	Tlr util	Trk ¼-ton	Trk ¾-ton	Trk 2½-ton	How 105-mm	How 155-mm	Misc	Total weight unit in S/T	C-119 or C-123	Pers	Tlr	Trk	Misc	Total weight unit in S/T	Acft combn	C-119 or C-123	C-124	Pers	Tlr	Trk	Misc
Div and atch, total	12,728	345	130	4	478	75	142	54	18	7	5,287	(689) *662	5,867	1,048	1,605	265	15,289	1 2	1,082	339 704	372	18	34	9
Div total	12,616	314	130	4	447	75	142	54	18	7	5,219	(689) *662	5,867	1,048	1,605	265	15,289	1 2	1,082	339 704	372	18	34	9
Div trp, total	1,038	29	41		63	12	29				584	(77) *73	668	156	288	21	2,050	1 2	231	19 95	112	6	9	2
Div hq	178										22	3	19				3	1 2	1	1	6			
Hq co	124	8			12						53	7	60	19	44	8	208	1 2	35	11	6	4	4	
Band																					70			
MP co	116				5						25	4	69	5	45	6	99	1 2	18	6	2			
Ord maint co	101	2	13		3	3	10				104	13	218	43	71		583	1 2	53	6 25	2		2	2

QM co	116	1	16		2		16				130	17	134	64	65		563	1 2		73	1 24	2			
Sig co	260	8	11		16	8	3				179	23	107	20	53		363	1 2		48	15	2		1	
Med det	14		Veh included in hq co								2	1													
Recon co	129	10	1		25	1					69	9	40	3	8	7[a]	209	1 2			12 12	2			
Repl co													21	2	2		22	1 2		3	1	20	2	2	
3 inf regt (total)	8,454	237	60		276	30	30				2,229	(288) *279	2,733	357	591	66	4,581	1 2		444	66 213	156	12	15	3
Inf regt (ea)	2,818	79	20		92	10	10				743	(96) *93	911	119	197	22	1,527	1 2		148	22 71	52	4	5	1
Hq and hq co	205	12	1		20	1					71	9	72	12	25		97	1 2		14	5	8	2	2	
Svc co	93		12		1	2	10				105	15	92	31	42		356	1 2		45	14	2	1	2	
Hv mort co	116	1	6		1	6					77	10	73	22	22		115	1 2		16	5	2	1	1	
Tk co													147	4	9	22[a]	499	1 2		2	22 23	2			1
Med co	160	6	1		10	1					40	5	50	2	12		61	1 2		8	3	2			
3 inf bn (total)	2,244	60			60						450	57	477	48	87		399	1 2		63	21	36			
Inf bn (ea)	748	20			20						150	(20) *19	159	16	29		133	1 2		21	7	12			

Table III. Infantry Division, Air-Landed—Continued

	INITIAL ECH												FOLLOW-UP ECH								REAR ECH			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Unit	Pers	Major items of equip									Total weight unit in S/T	Acft rqmt	Pers	Major items			Total weight unit in S/T	Acft combn	Acft rqmt		Pers	Major items		
		Tlr ¼-ton	Tlr 1-ton	Tlr util	Trk ¼-ton	Trk ¾-ton	Trk 2½-ton	How 105-mm	How 155-mm	Misc		C–119 or C–123		Tlr	Trk	Misc			C–119 or C–123	C–124		Tlr	Trk	Misc
Hq and hq co	82	6			6						24	3	34	4	11		48	1 2	7	2	4			
3 rifle co (total)	522	6			6						97	12	105	9	9		52	1 2	9	3	6			
Rifle co (ea)	174	2			2						29	4	35	3	3		18	1 2	3	1	2			
Hv wpn co	144	8			8						39	5	20	3	9		31	1 2	5	2	2			
Div med bn	214	1	3		2	2 10 amb (KD)	1				142	(19) *18	119	31	64		339	1 2	46	16	8			
Hq and hq co	51				1						22	3	46	14	21		101	1 2	14	5	4			
Amb co	47	1			1	10 amb (KD)					45	6	41	5	26		108	1 2	15	6	2			
Clr co	116		3			2	1				75	10	32	12	17		130	1 2	17	5	2			

Div engr C bn	737	20	6	4	23	1	10			1 dozer	358	48	227	93	131	18	1,705	1 2	8	67 71	12			2
Hq and hq and svc co[b]	189	4	2		7	1	2			1 dozer	118	16	107	41	67	10	869	1 2		35 35	4			2
Engr C co (4) (total)	548	16	4	4	16		8				240	32	120	52	64	8	836	1 2	8	32 36	8			
Engr C co (ea)	137	4	1	1	4		2				60	8	30	13	16	2	209	1 2	2	8 9	2			
Div arty	2,173	27	20		83	20	72	54	18	Acft 6	1,906	(257) *244	1,447	369	443	90	4,507	1 2	311	108 216	74		1	
Hq and hq btry, div arty[b]	160	4	4		8	4					48	6	60	18	41	2	199	1 2	33		10	8		
105-mm bn (3) (total)	1,518	18	12		60	12	54	54		Acft 6	1,284	(177) *168	468	174	264		1,749	1 2	219	3 81	36			
105-mm bn (ea)	506	6	4		20	4	18	18		Acft 2	428	(59) *56	156	58	88		583	1 2	73	1 27	12			
Hq and hq btry	118	5	2		10	2				Acft 2	42	8	46	9	27		119	1 2	16		6	4		
105-mm btry (3) (total)	339				9		18	18			369	48	75	33	39		252	1 2	3		12	6		
105-mm btry (ea)	113				3		6	6			123	16	25	11	13		84	1 2	11		4	2		
Svc btry	49	1	2		1	2					17	3	35	16	22		212	1 2	24	1 9	2			
155-mm bn	495	5	4		15	4	18		18		574	(74) *72	153	49	64	24	770	1 2	42	23 38	18			

Table III. Infantry Division, Air-Landed—Continued

1	INITIAL ECH												FOLLOW-UP ECH								REAR ECH			
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Major items of equip										Acft rqmt		Major items					Acft rqmt			Major items		
Unit	Pers	Tlr ¼-ton	Tlr 1-ton	Tlr util	Trk ¼-ton	Trk ¾-ton	Trk 2½-ton	How 105-mm	How 155-mm	Misc	Total weight unit in S/T	C–119 or C–123	Pers	Tlr	Trk	Misc	Total weight unit in S/T	Acft combn	C–119 or C–123	C–124	Pers	Tlr	Trk	Misc
Hq and hq btry	79	4	2		8	2					35	5	60	8	21	2	104	1 2	19	7	4			
155-mm btry (3) (total)	366				6		18		18		522	66	57	27	21	21	438	1 2		21 21	12			
155-mm btry (ea)	122				2		6[c]		6		174	22	19	9	7	7	146	1 2		7 7	4			
Svc btry	50	1	2		1	2					17	3	36	14	22	1	228	1 2	23	2 10	2			
AAA AW bn (SP)													766	128	74	64	1,789	1 2	17	82 87	12		1	
Hq and hq btry													158	28	34		285	1 2	17	6 11	4		1	
AW btry (4) (total)													608	100	40	64	1,504	1 2		76 76	8			
AW btry (ea)													152	25	10	16	376	1 2		19 19	2			

Tk bn														673	42	88	70[a]	2,017	1 2	42	79 93	10		9	2
Hq, hq and svc co[b]														232	30	67	4	610	1 2	36	13 24	4			2
Tk co (3) (total)														441	12	21	66	1,497	1 2	6	66 69	6		9	
Tk co (ea)														147	4	7	22	499	1 2	2	22 23	2		3	
Total atch teams	112	31			31						68	11													
ASA																									
ASA in (BF)	3	1			1																				
Intel																									
IPW (BB)	3	1			1																				
Tltr (BF)	3	1			1																				
Intrpr (BJ)	3	1			1																				
Det CIC (AB–BB)	17	5			5																				
Civil affairs div																									
Plat (AA, AE, CB, DA, EA, ED)	29	8			8																				
TACP (12)	48	12			12																				
AirLO team	6	1			1																				

* Indicates total number of aircraft when subordinate units are loaded without regard to tactical integrity. Attached teams are loaded throughout the division in utilizing unused allowable cargo payload.

[a] Aircraft requirements based on substituting light tanks for medium.

[b] Includes medical detachment.

[c] Substitute 2½-ton trucks for trucks, cargo, 4-ton as prime movers for 155-mm howitzers.

APPENDIX IV
DETERMINATION OR COMPUTATION OF AIRCRAFT REQUIREMENTS

1. GENERAL

a. In order to plan for movement by air, commanders and staff officers must be familiar with types and characteristics of aircraft available for the move. With this information as background, it is possible to make use of the various methods that have been devised to compute aircraft requirements. Three methods to be considered in this appendix are—

(1) The type load method.
(2) The equipment method.
(3) The weight method.

b. None of the above methods can be used in computing loads of an airborne division for assault, as parachute loading does not depend on allowable cargo weights of aircraft.

2. REFERENCES

a. The following references provide technical data and guidance for computing aircraft requirements:

(1) TM 71–210 *Air Transport of Troops and Equipment.*
(2) AFM 115–65–1 *AF Staff Officers' Manual.*
(3) FM 101–10 *Staff Officers' Field Manual, Planning Data.*

3. TYPE LOAD METHOD

a. This method is the typical arrangement of personnel and cargo within load limits and center of gravity for safe flight. It is used to compute aircraft requirements for units the size of a regiment or smaller, and furnishes exact and detailed information on loading. Use of this method requires familiarity with safe loading principles. Factors required to determine the number of aircraft to move a unit are as follows:

(1) Amount of personnel and equipment in the unit to be loaded.
(2) Weight and dimension data of items to be loaded.

(3) Cargo-carrying characteristics of the aircraft to be used.

(4) The allowable cargo load for the contemplated move.

b. By considering the above data, aircraft requirements for small units can be determined.

c. Example. Determine the number of C–119 airplanes required to transport a field artillery battalion, 105–mm howitzer, of the infantry division, for a distance of 600 miles. The airplanes will not be refueled at the destination airfield.

(1) As presently organized the strength of this battalion is 669 officers and men. Assume individual weight including equipment and ammunition of 240 pounds per person; 3 days' supply, classes I and III, total 58,063 pounds and 181,429 pounds of ammunition are to accompany the battalion.

(2) Vehicles of the battalion, with weights are as follows:

Item	*Weight (each)*
44 trk, ¼-ton	2,450 pounds
9 trk, ¾-ton, 4x4, comd and recon	5,675 pounds
20 trk, ¾-ton, 4x4, wpn carr, w/wn	5,940 pounds
26 trk, 2½-ton, 6x6, cargo, LWB	10,745 pounds
36 trk, 2½-ton, 6x6, cargo, SWB	10,350 pounds
1 wrecker, 4-ton	21,350 pounds
32 tlr, ¼-ton, 2-wheel, cargo	500 pounds
11 tlr, 1-ton, 2-wheel, cargo	1,300 pounds
21 tlr, ammunition, M–10	2,090 pounds
5 tlr, 1-ton, 2-wheel, water tank, 250 gallons	1,500 pounds
Eighteen how M2A1 on M2A2 carriage, weight each	4,980 pounds

(3) Appendix XXI, Cargo Aircraft, gives estimated cargo-carrying characteristics of the C–119.

(4) Troop carrier announces 17,000 pounds as the allowable cargo load for the move, 600 miles, air transport, radius conditions.

(5) Considering the data stated, and by consulting Technical Manual 71–210 for principles of safe loading, and the list of typical safe loads, appendix XXI, C–119, the personnel supplies and vehicles are arranged in type loads as follows:

Type I	*Pounds*
3 trk, ¼-ton, ea w/2 men at sta—	8,790
3 tlr, ¼-ton, ea w/500 pounds equipment at sta—	3,150
12 men at sta—	2,880
Total weight	14,820
Type II	*Pounds*
1 trk, 2½-ton, 6x6, cargo, SWB, w/2 men at sta—	10,830
1 how, 105-mm, M2A1 on M2A2 carriage at sta—	5,000
5 men at sta—	1,200
Total weight	17,030

Type III	*Pounds*
1 trk, ¾-ton, 4x4, wpn carr, or comd and recon w/2 men at sta—.	6,420
1 trk, 2½-ton, 6x6, cargo, SWB, w/1 man at sta—	10,590
Total weight	17,010

Type IV	*Pounds*
1 trk, 2½-ton, 6x6, cargo, LWB, w/1 man at sta—	10,985
1 tlr, ammo, M–10 at sta—	2,090
Additional cargo, ammo at sta—	3,925
Total weight	17,000

Type V	*Pounds*
1 trk, 2½-ton, 6x6, cargo, LWB, or SWB, w/2 men at sta—	11,225
1 tlr, 1-ton, 250-gal, water, or trailer 1-ton, cargo 2-wheel at sta—.	1,500
Additional cargo in 2½-ton trk	4,275
Total weight	17,000

Type VI	*Pounds*
3 trk, ¼-ton, 4x4, w/4 men per trk at sta—	10,230
Additional cargo at sta—	6,770
Total weight	17,000

Type VII	*Pounds*
2 trk, ¾-ton, 4x4, wpn carr, w/8 men per trk at sta—	15,720
Additional cargo at sta—	1,280
Total weight	17,000

Type VIII	*Pounds*
47 men at sta—	11,280
Additional cargo at sta—	5,720
Total weight	17,000

Type IX	*Pounds*
Cargo at sta—	17,000

(6) By inspection the number of C–119s required is determined—

Type	I—11
Type	II—18
Type	III— 7
Type	IV—21
Type	V—16
Type	VI— 4
Type	VII—11
Type	VIII— 1
Type	IX— 2
	91

Note. The 4-ton wrecker is not loaded in above loads.

(7) Therefore, 91 (C–119) airplanes are needed to transport the field artillery battalion, 105-mm howitzer (at 17,000 lb., allowable cargo weight).

4. EQUIPMENT METHOD

a. This method is designed for use by staff planners of division and higher levels in estimating aircraft requirements for general planning purposes. By this method the number of aircraft to be allocated to lower units may be estimated, leaving the problem of selecting type loads to the lower units. There are three steps in this method:

(1) Determine the minimum number of aircraft required to lift major items of equipment of the unit by selecting typical safe equipment loads (app. XXI, Cargo Aircraft) which include all the major items of equipment to be moved and totalling the number of aircraft required to move all of the load. Caution must be exercised that the allowable cargo weight as stipulated for the particular aircraft for the particular move is not exceeded by the typical load selected.

(2) Determine the gross cargo weight to be moved, including personnel, equipment, vehicles, weapons, and supplies. Divide this figure by the allowable cargo weight to determine the number of aircraft required.

(3) Select the larger of the two aircraft requirements derived above.

b. Example. As a corps planning officer you are required to compute the number of C–119 airplanes to transport a field artillery battalion, 105-mm howitzer, (infantry division). The distance of the move is 600 miles. There are no refueling facilities at the destination for airplanes.

(1) Vehicles and towed weapons are as stated in the example of the type load method.

(*a*) The allowable cargo weight for the C–119 airplane at 600 miles radius is 17,000 pounds.

(*b*) Typical safe loads are indicated in appendix XXI.

Vehicles and towed weapons	*Total weight*	*Aircraft required*
30 trk, ¼-ton, and 30 tlr, ¼-ton	90,000	10
18 trk, 2½-ton, SWB and 18 105-mm how M2A1 (at 5,000 lb each).	276,300	18
21 trk, 2½-ton, LWB, and 21 tlr, ammo, M10.	269,535	21
5 trk, 2½-ton, LWB, and 5 tlr, 1-ton, water	61,225	5

Vehicles and towed weapons	*Total weight*	*Aircraft required*
11 trk, 2½-ton, SWB, and 11 tlr, 1-ton, 2W	128,150	11
2 trk, ¾-ton, comd and recon, and 2 tlr, ¼-ton.	12,450	1
7 trk, 2½-ton, SWB, and 7 trk, ¾-ton, comd and recon.	112,175	7
14 trk, ¼-ton	34,300	5
20 trk, ¾-ton, wpn carr	118,800	10
	1,102,935	88

(2) Therefore the minimum number of C–119 aircraft to load the major items of equipment of a field artillery battalion 105-mm howitzer is 88. This excludes the 4-ton wrecker, and 2 Army aircraft to be flown in.

(3) The second step consists of—

(*a*) Computing gross cargo weight:

	Pounds
Vehicle weight (less 4-ton wrecker and 2 Army aircraft).	1,102,935
Personnel weight (660x240)	158,400
Supply, 3 days' classes I and III and organization equipment.	88,063
Basic load class V	181,429
	1,530,827

(*b*) Divide gross cargo weight by allowable cargo weight: 1,530,827 ÷ 17,000 = 90.05 or 91 airplanes.

(4) The third and final step is to select the larger of the two requirement figures derived. In this case the requirement is 91 C–119s as determined by the second step.

5. WEIGHT METHOD

a. The weight method is used for computing aircraft requirements to transport large amounts of supplies and equipment. The method is based on the fact that total weight to be moved will be the determining factor rather than type loads of typical safe loads. This method cannot be depended upon to compute requirements accurately for units in which major items of equipment are the controlling factor in loading the unit.

b. Example.

(1) As a corps planning officer you are required to compute the number of C–119 airplanes to transport a field artillery battalion 105-mm howitzer, (infantry division). The distance is 600 miles radius operation and the allowable cargo load is 17,000 pounds.

(2) Divide the gross cargo weight by the allowable cargo weight load which gives the number of aircraft required. (See step 2 of the equipment method above.)

APPENDIX V
TYPICAL TROOP CARRIER AIRFIELD SYSTEM AND ROUTE DIAGRAM

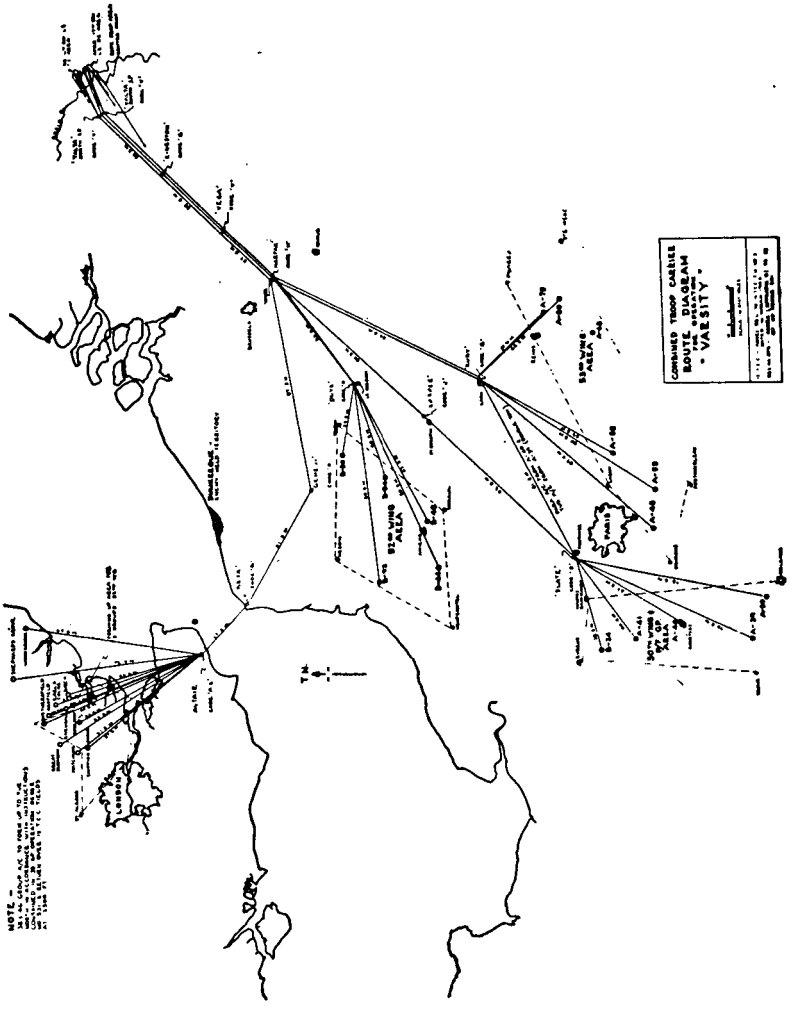


Figure 6. Typical troop carrier airfield system and route diagram.

APPENDIX VI
FORMATION PARACHUTE—AIRCRAFT

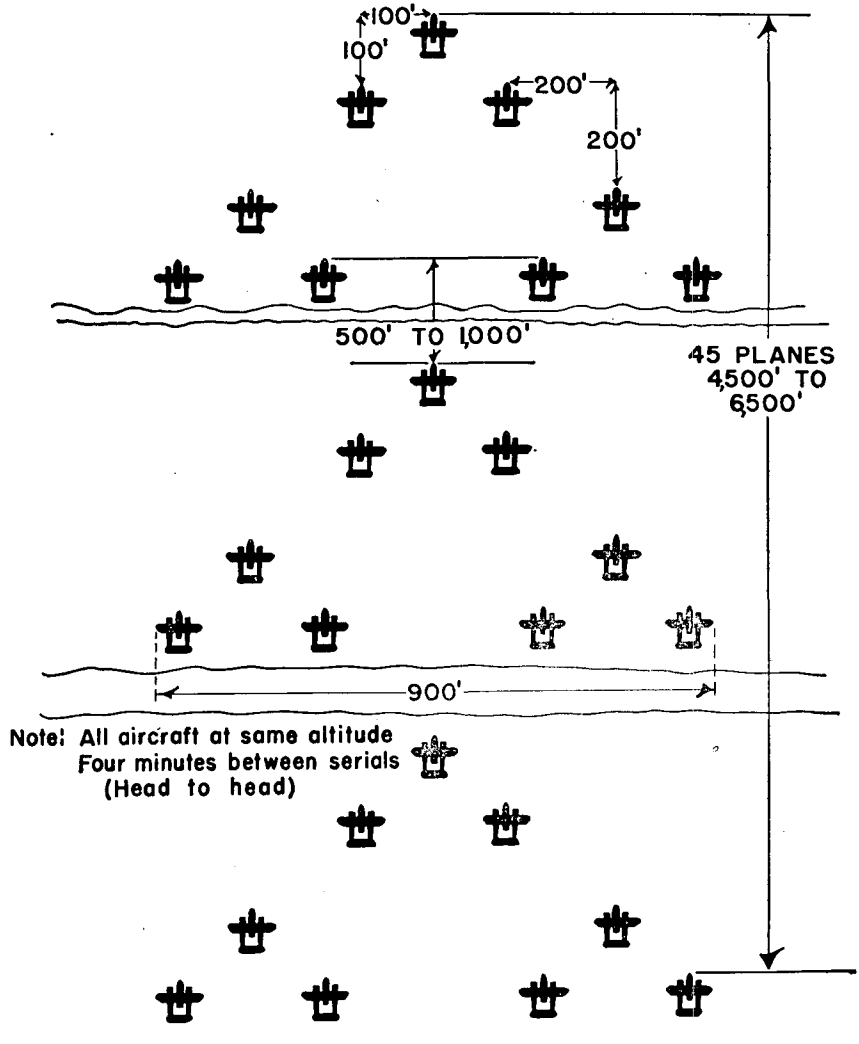


Figure 7. Troop carrier command formation—parachute aircraft.

APPENDIX VII

SCHEDULE OF PLANNING FOR AIRBORNE OPERATIONS

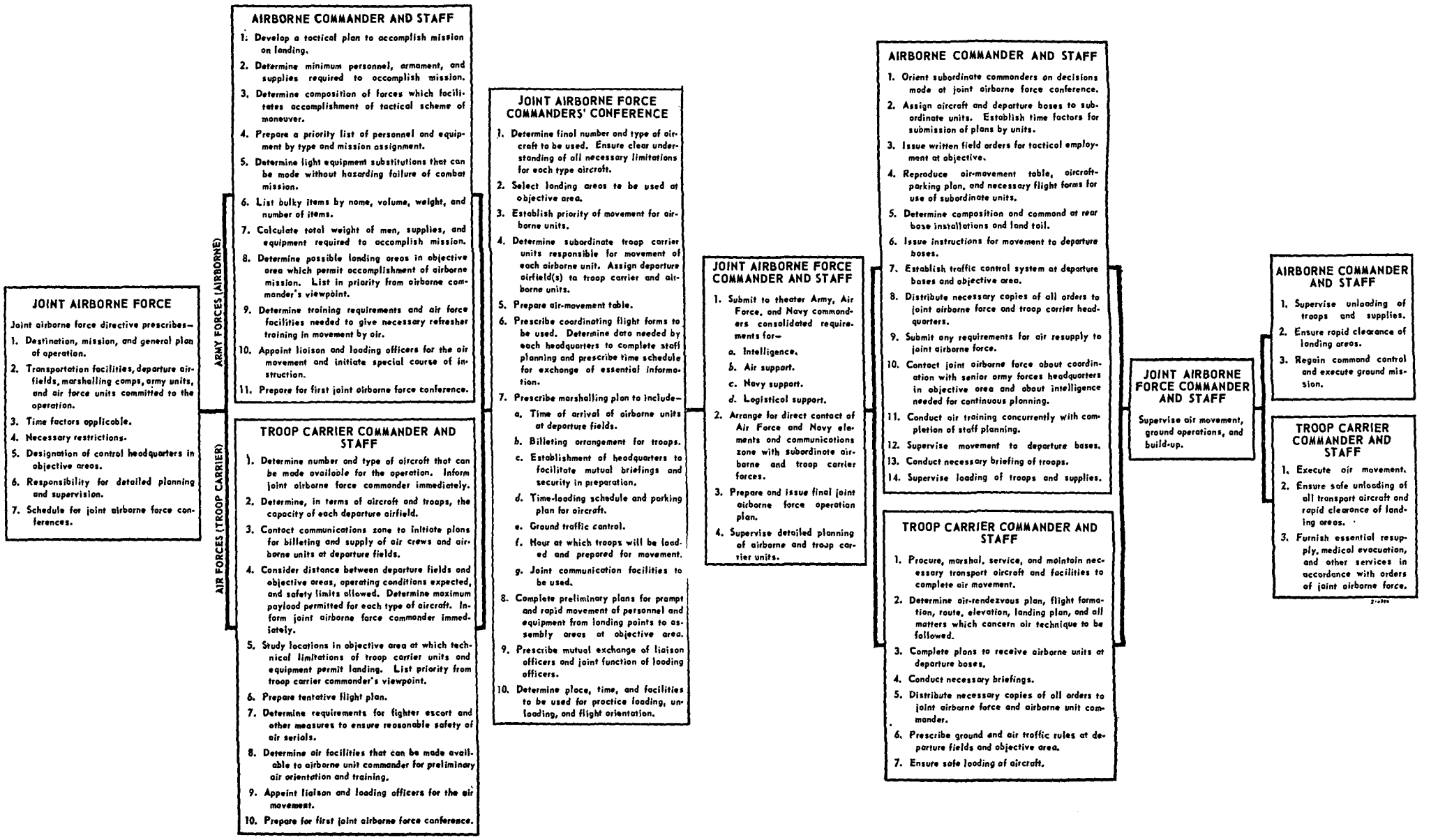


Figure 8. Schedule of planning for airborne operation.

APPENDIX VIII

STAFF PLANNING FOR AN AIRBORNE OPERATION

1. GENERAL

a. Upon receipt of an order for an airborne operation a sequence of planning is initiated within each staff section. The planning which occurs simultaneously within each staff section is designed to permit rapid assimilation of logistical and operational data and enable the commander to arrive at his decision without delay.

b. Staff planning schedules outlined in the following paragraphs are based on a 7-day alert.

2. G1—PRIOR PLANNING

a. Strength of Command.

(1) Maintain active records on authorized strength, effective strength, overstrength, and understrength.

(2) Build up understrength units.

(3) Expedite filling of reinforcement requirements.

(4) Expedite recovery of casuals from depots.

(5) Restrict leaves and furloughs to a minimum.

(6) Estimate losses for operation.

(7) Set up combat replacement scheme.

(8) Clear personnel subject to chronic airsickness.

b. Liaison with G3.

(1) Probable concentration areas, assembly areas, or both, and take-off airdromes—locations, lay-outs, personnel, and overhead requirements.

(2) Approximate composition and strength of all echelons to be committed.

(3) Maintenance of up-to-date troop and station lists.

(4) Maintenance of corrected staff and command rosters.

(5) Allocation of replacements.

c. Liaison with G4. Coordinate with G4 for transportation, supplies, and equipment at take-off airfields, and to concentration areas, assembly areas, or both.

d. Liaison with G2.

(1) Security passes to airfields, and areas of concentration or marshalling.

(2) Censorship.

(3) Security aspects of public information plan.

e. Liaison with Special Staff.

(1) Military government officer—objective area.

(2) *Special services:*

(*a*) Plan for marshalling areas.

(*b*) Plan for movement with follow-up.

(*c*) Plan for supply.

(3) *Adjutant general:*

(*a*) Plan for flight manifest form.

(*b*) Plan for initial phase in combat.

(*c*) Plan for follow-up phase.

(*d*) Plan for administrative center in combat area.

(4) *Judge advocate.*—Handling of parachute refusals.

(5) *Finance officer:*

(*a*) Pay of troops.

(*b*) Recovery of currency.

(*c*) Exchange of currency.

(*d*) Tentative plan for payments while in combat.

(6) *Headquarters commandant:*

(*a*) Composition of headquarters and headquarters company.

(*b*) Plan for division command post on take-off field.

(*c*) Accommodations for commanding general and staff in field.

(*d*) Plans for messing of commanding general and staff.

(*e*) Facilities for briefing staff in field.

(*f*) Tentative plan for division command post in objective area.

(*g*) Tentative plan for local security at headquarters.

(7) *Postal officer:*

(*a*) Plan for marshalling areas.

(*b*) Plan for combat area.

f. Detailed Planning for Marshalling Areas and Take-Off Airfields.

(1) Liaison with base section for—

(*a*) Billets and other accommodations.

(*b*) Communication.

(*c*) Cots and blankets.

(*d*) Sanitary facilities.

(*e*) Post exchange supplies.

(*f*) Recreational facilities to supplement division special services.

(2) *Special services*:

(*a*) Bands, movies, and shows.

(*b*) Doughnuts and coffee.

(c) Newspapers, service papers, books, and other materials.

(*d*) Games and sports.

(*e*) Radios.

(3) *Postal.*—Mail, censorship, distribution, and collection.

(4) *Plan for unit advance parties to marshalling areas.*

(*a*) Strength and composition.

(*b*) Designation of commanding officer for each advance party.

(*c*) Instructions to commanding officer regarding—

1. Liaison with base section representative and airfield commander.

2. Passenger list collection.

3. Rear party duties; police of accommodations.

(5) *Unit command post on each field:*

(*a*) Location.

(*b*) Communication.

(*c*) Staffing.

(*d*) Messing.

(*e*) Briefing.

g. Prepare Roster of Commanders.

(1) Staff and command forward echelons, to include all field grade officers.

(2) Commanding officers, follow-up echelons, to include all field grade officers.

(3) Succession of command.

(4) Senior commanders for each lift on each field and his liaison officer.

(5) Rear echelon commanders.

(6) Advance party commander for each field and area.

(7) Rear party commander for each area (may be advance party commanding officer).

(8) Passenger list officer on each field (may be advance party commanding officer).

(9) Unit graves registration officer.

(10) Base section airfield representative.

h. General Alert to Units.

(1) Prepare for liquidation of unit exchanges.
(2) Prepare for disposition of company funds accounts and fiscal matters of individuals.
(3) Prepare for consolidation of administrative sections.
(4) Prepare for evacuation of billets to be vacated.
(5) Plan for storage of B bags and officers' luggage.
(6) Briefing of graves registration personnel.

i. Elimination of Ineffectives.

(1) Chronic airsick personnel.
(2) Parachute refusals.
(3) Unfit for combat duty.
(4) Limited assignment personnel.
(5) Sick and injured hospitalized.

j. Standing Operating Procedure on G1 Section.

(1) Breakdown to echelons.
(2) Responsibilities of individuals.
(3) Preparation of supplies and equipment.
(4) Preparation of records.
(5) Plan for follow-up.

3. G1 CHECKLIST, D–7 TO D–DAY

a. D–7.

(1) Mission orders.
(2) Alert following to implement plans:
(*a*) Adjutant general.
(*b*) Special services officer.
(*c*) Postal officer.
(*d*) Red Cross.
(*e*) Finance officer.
(*f*) Judge advocate.
(*g*) Provost marshal.
(*h*) Headquarters commandant.
(*i*) Base section field representative.
(*j*) Chaplain.
(*k*) Graves registration officer.
(*l*) Military government officer.
(3) Make assignments for advance parties to all areas.
(4) Call for final figures on composition of all echelons.
(5) Call for any changes in rosters.
(6) Recall all available personnel on leave or furlough.
(7) Recall detached service and temporary duty personnel.

b. D–6.

(1) Brief G1 section.

(2) Meet unit adjutants and an adjutant general representative to discuss required reports, strength accounting, and other personnel matters.

(3) Follow-up on D–7 work.

(4) Determine location and set-up of division command post in objective area.

(5) Collate final data from higher headquarters for G1 reports.

(6) Prepare draft data for administrative order.

c. D–5.

(1) Complete all planned work.

(2) G1 visit airfields and assembly areas for check-up on base section preparations.

(3) Assistant G1 prepare turn-over of unfinished business to rear echelon representatives.

(4) Close up all boxes for loading.

(5) Submit data for administrative order.

d. D–4.

(1) Final check-up on all G1 activities.

(2) G1 to division command post on airfield.

(3) Assistant G1 remain at base until last moment.

(4) All other personnel and equipment to airfield or assembly area.

e. D–3 to D–1.

(1) Assistant G1 moves to airfield when all unit forward echelons are closed.

(2) G1 corrects records and rosters for last-minute changes.

(3) Set up tentative plan in event of mission cancellation.

4. G2 PRIOR PLANNING

a. In order for G2 to plan efficiently, beginning D–7, the following information must be compiled and kept up to date:

(1) All available information of the enemy, or potential enemy, the terrain, and the weather.

(2) Security plan for mounting an airborne operation. Appendix XVIII.

(3) Up-to-date standing operating procedure for combat intelligence. Appendix IX.

(4) Standing operating procedure for movement of G2 section into combat by parachute and assault aircraft: sea, overland, and rear echelons designated.

(5) List of attached intelligence teams and supporting teams for sustained operations and plan for employment thereof.

(6) (*a*) Map and air photo distribution plan and complete cataloging of map indexes of probable target areas.
(*b*) Map and air photo security plan.

(7) List of subversive and disaffected personnel within the division.

(8) Plans for briefing troops on enemy situation prior to movement to marshalling area and following sealing in marshalling area.

(9) Coordination with G1 for prisoners, captured documents, military police, civilian and postal matters.

(10) Coordination with G4 for examination of captured matériel.

(11) Maintenance of contact and exchange of information with intelligence sections of subordinate, higher, and neighboring units.

(12) List of additional equipment needed for sustained operations of intelligence agencies.

(13) Standing operating procedure for handling intelligence funds and escape kits.

5. G2—CHECKLIST D–7 TO D-DAY

a. D–7.

(1) G2 studies the details of the projected operation.

(2) G2 calculates time available for planning and dissemination of information, and recommends to the chief of staff the studies to be made, to include weather and terrain, population, town government, intelligence objectives, and enemy defenses, particularly antiaircraft artillery.

(3) Section starts work on collection plan, intelligence plan, and counterintelligence plan.

(4) Information is obtained from higher headquarters as to map coverage available, and distribution schedule is prepared by division engineer.

(5) Prepare map distribution chart.

b. D–6.

(1) Photo coverage available for subordinate units is distributed.

(2) Dissemination of intelligence studies is commenced.

(3) Intelligence funds are checked.
(4) Escape items are checked.
(5) Progress of map distribution is checked.
(6) Counterintelligence plan is put into execution and checked by Counter Intelligence Corps.
(7) Loading plans for section are completed.
(8) General staff briefings by commander.

c. D–5.

(1) Check on counterintelligence plan continues.
(2) Progress of map distribution by division engineer is checked.
(3) Means of communication checked; activities of liaison officers coordinated with G3.

d. D–4 through D–1.

(1) Dissemination of intelligence continued.
(2) Counterintelligence controls continued.
(3) Check issuance of sign and countersign to unit S2s.
(4) Escape and evasion instructions are issued.

6. G3—PRIOR PLANNING

In order for G3 to plan efficiently beginning D–7, the following information must be compiled in advance and kept up to date:

a. Up-to-date list of aircraft requirements for all types of missions based on Tables of Organization, Tables of Equipment, and actual strengths.

b. Probable take-off airdromes—locations, lay-out, personnel, and number of aircraft by type at each.

c. Approximate composition and strength of air, sea, overland, and rear echelons.

d. Up-to-date troop list and status report of personnel.

e. List of attachments and supporting troops.

f. List of additional equipment needed for sustained operations.

g. Standing operating procedure on movement of G3 section into combat by parachute and assault aircraft. Sea, overland, and rear echelons designated.

h. Maps of general area on hand. Probably will have to be small-scale.

7. G3—CHECKLIST, D–7 TO D-DAY

a. D–7.

Headquarters or personnel concerned	Subject	Remarks
Higher headquarters; with division commander and air adviser. Liaison officer standing by.	*Mission orders*—covering the following points: (1) Enemy situation and capabilities to include anti-aircraft concentrations. (2) Terrain and weather. (3) General plan of entire operation—air, sea, and ground aspects. (4) Mission of airborne units, to include general destination, date and exact hour of landing; probable time link-up is made; and probable time until relief of division. (5) Composition of airborne units committed. (6) Composition and equipment of Air Force unit to provide lifts. Allocation of aircraft; payloads. General areas for landing zones and drop zones. Probable air routes to landing zones and drop zones. (7) Plan for coordination with other army units. (8) Air and naval cooperation plans. Allotment of cooperation parties. (9) Cover plan. (10) Signal and communication arrangements. Pathfinders. (11) Chemical warfare to include need for gas masks and use of screening smoke. (12) Special equipment. (13) Arrangements for altering or canceling operation.	Conference (may or may not include troop carrier command representatives). G3 is responsible for obtaining all G1, G2, and G4 information available at higher headquarters.

From any G2 source	*Maps*—At least one set.	Fastest means possible.
From any G2 source	*Photos*—At least one set.	Fastest means possible.
From any G2 source	*Models*—At least one set.	Fastest means possible.
From any G3 source	*Preliminary Study*—with division commander and air adviser to cover the following points: (1) Employment of divisional units to accomplish mission. (2) Tentative drop zones and landing zones. (3) Aircraft requirements. (4) Special engineer and signal equipment. (5) Supply and resupply requirements—drop zones and landing zones to be used. (6) Tentative schedule for planning, decisions and issuance of orders within the division.	Immediately following receipt of orders.
With commanding generals and G3s of adjacent units; commanding generals, A3s, and pathfinder representative of troop carrier command units.	*Preliminary joint conference*—Commanding general outlines to troop carrier command his plan for execution of mission. Decisions are reached on following points: (1) Tentative flight plan. (2) Tentative drop zone and landing zone selection. (3) Take-off airfields; number of type aircraft at each. (4) Size of serials. (5) Order of arrival at drop zones and landing zones. (6) Alternate drop zones and landing zones and prearranged plan for use of same. (7) Jump altitude. (8) Pathfinder methods and master plan for drop zone and landing zone markings. (9) Resupply plans. (10) Plans for movement to and billeting at airfields. (11) Communication at departure airfields.	It is extremely desirable to accomplish this phase as soon as possible and before returning to own unit.

Headquarters or personnel concerned	Subject	Remarks
	(12) Mutual recognition. (13) Boundaries and contact points.	
To higher headquarters	*Planning staff*—Placed on duty at higher headquarters in addition to liaison officer, initial briefing by G3.	One G3 staff officer with transportation.
From troop carrier command, adjacent and subordinate units and, if possible, from link-up unit(s).	*Liaison officers*—Notified or requested to report to division headquarters as soon as practicable with transportation.	Fastest means possible.

b. D–6 and D–5.

Headquarters or personnel concerned	Subject	Remarks
To assistant division commander, chief of staff, G1, G2, G4, and their assistants if practicable.	*Briefing for general staff*—To cover all information gained and decisions made up to this time. Reach decision on troop priority for move to airdromes and senior airborne commander at each airdrome.	Conference held immediately upon arrival from troop carrier command. G3 may or may not assist division commander.
From division commander or chief of staff to general staff, division artillery commander, antitank officer, signal officer, and assistant G3.	*Directives*—For planning and preparation of operation order.	Conference.
To special staff	*Briefing for special staff*—Same information as for general staff briefing. Set deadline on recommendations consistent with above directive. Special instructions to signal officer regards communication at takeoff airfield.	Conference conducted by G3.
To remainder of division special staff	*Briefing*—Same information as above.	Conference conducted by assistant G3.

To necessary members of G3 section; division pathfinder officer, and all liaison officers.	*Briefing*—Same information as above.	Conference conducted by assistant G3.
From division artillery commander, antitank officer, engineer officer, signal officer, G3 Air—with G1, G2, and G4.	***Recommendations from special staff***—Consolidated and added to framework of operation order.	Conference with G3.
	Recommendations to chief of staff and commanding general (in turn)—Operation order drafted and time set for briefing of unit commanders.	Conference.
To all unit commanders	*Briefing*—Issue tentative overlay and draft of operation order. It is most important at this time that as much information as possible be given unit commanders regarding aircraft allotments and airfield assignments and, in turn, unit commanders be required to submit within 24 hours combat strengths in air, sea, and overland echelons (air lifts broken down to airdromes). Next meeting announced for D-5 at which time unit commanders will receive final copy of operation order.	Conference conducted by division commander with G2 and G3.
All liaison officers and G3 section	*Briefing*—Same information as above.	Conference conducted by assistant G3.
From G2	*Maps:* 1:25,000—G3 –1 G3 Air –1 Liaison officer, corps –1 2 liaison officers—Adjacent units –2 Air Force navigation map for air adviser –1 Air-ground liaison officer –1	
To appropriate headquarters	*Liaison officer*—All dispatched except liaison officer to TAC and troop carrier command.	Fastest means possible.
With air adviser	*Air movement table*—Work out final details. Place all division headquarters planning personnel at same airfields insofar as possible.	

c. D–5.

Headquarters or personnel concerned	Subject	Remarks
With troop carrier command A3, liaison officer to troop carrier command present.	*Joint conference*—With assistance of air adviser present air movement table to troop carrier command and reach agreement on final form and details. Final decisions on flight plan and use of pathfinders.	Liaison officer troop carrier command units remain at headquarters troop carrier command unit.
To chief of staff and commanding general.	*Operation order*—All recommendations submitted by personnel concerned and final draft presented to chief of staff and commanding general in turn for approval.	
To all unit commanders		Written orders issued personally to commanding officers and liaison officers.
All liaison officers to be present	*Briefing*—Final briefing of unit commanders and issuance of written operation order. At this time unit commanders will present their plans for execution of missions assigned. D–3 set as deadline for submission of unit operation orders.	
To appropriate headquarters TAC	*Liaison officer*—Dispatched with air cooperation plan and copy of division operation order. To return to division headquarters with confirmation as soon as possible. Thereafter to make trips as often as necessary.	By fastest means possible.
To ground unit concerned	*Air-ground liaison officer*—Dispatched to link-up ground unit with copy of division operation order and special instructions for division follow-up units.	To return with detailed plan of link-up unit if time permits.
From G2	*Additional maps as needed.*	

d. D–4.

Headquarters or personnel concerned	Subject	Remarks
	Movement of command post group to take-off airdromes. Set up small scale command post to include a situation room. Enough office supplies on hand to publish another operation order if necessity should arise.	Light aviation available at each airdrome. Division commander's plane ready at all times for immediate take-off.

e. D–3, D–2, and D–1.

Headquarters or personnel concerned	Subject	Remarks
To TAC headquarters	*Liaison officer*—To be at TAC headquarters on D–1 and D-day and as soon as practicable to join division in combat zone.	Army aircraft transportation.
To troop carrier command	*Liaison officer*—To remain at headquarters, troop carrier command until completion of air resupply missions after which time to join division in combat zone.	To work closely with G4 resupply officer.
All units	*Unit operation order*—Careful study to note scheme of maneuver and command post locations. *General functions*—Supervise execution of all plans for allocation and loading of aircraft. Continuous study of weather and tactical situation. Maintain close contact with all unit commanders.	

8. G4—PRIOR PLANNING

In order to efficiently prepare and make plans beginning D–7, the following must be accomplished in advance:

a. Daily checks of equipment and supplies to determine the serviceability and status.

b. Frequent inspections of motor vehicles for all classes of maintenance and repair, keeping always in mind their possible commitment to action over a long period of time with a small amount of repair.

c. Issue a complete basic load of ammunition and incendiaries down to separate unit level.

d. To be stocked in the quartermaster warehouse, three complete reserve rations for each individual.

e. All medical chests in medical company to be completely stocked and held in readiness for combat operation.

f. To maintain an ample stock of flame throwers and fuel plus any other special item deemed necessary by the division commander.

g. To stock and maintain ample signal corps expendable supplies.

h. To stock and maintain a large amount of explosives and demolitions in readiness for any type of mission.

i. To pack and maintain sufficient personnel and equipment chutes for an operation, broken down by units in preparation for quick delivery.

j. Follow-up air supply standing operating procedure—prepared with fixed prearranged load for all types of supply.

k. Prepare skeleton administrative order.

9. G4—CHECKLIST, D–7 TO D-DAY

a. D–7.

(1) Alert special staff and unit supply personnel.

(2) Determine existing shortages in units. Have requisitions prepared and submitted to proper supply agencies.

(3) Issue reserve rations to units.

(4) Secure and issue special equipment required for the mission (coordinate with G3).

(5) Determine amount of follow-up air supply required and arrange for delivery, time of arrival and codes. (Coordinate with G3 for pathfinder aids.)

b. D–6.

(1) Division commander conference.
(2) Determine composition of road convoys. Obtain routes and road clearance.
(3) Plan for movement to airfields.
(4) Check air supply plan.
(5) Accommodations at airfields.
(6) Submit ration strengths for various airfields. (Coordinate with G3.)
(7) Determine drop zone and landing zone for supplies.
(8) Check with chief of staff for additional instructions.

c. D–5.

(1) Check on flow of supplies.
(2) Get priority on move to airfields. (Coordinate with G3.)
(3) Secure additional transportation.
(4) Briefing of special staff. Issue special instructions on operation to special staff liaison officers and transportation officers.
(5) Issue tentative administrative order.
(6) Check with chief of staff for additional instructions.

d. D–4.

(1) Prepare final administrative order. (Coordinate with G1 and G3 and submit to chief of staff for approval).
(2) Check with unit supply officers for any last-minute issues.
(3) Check with chief of staff for additional information.

e. D–3, D–2, and D–1.

(1) Movement to airports.
(2) Departure of road convoys.
(3) General functions and supervision of G4 matters. Maintain close contact with unit supply officers and adjust last-minute shortages.
(4) Maintain close contact with unit air-supply parties.

APPENDIX IX

STANDING OPERATING PROCEDURE FOR ASSAULT AIRBORNE DIVISION

CLASSIFICATION

102d Abn Div
Place of issue
Date

1. GENERAL

a. Purpose. This standing operating procedure standardizes normal procedures for the airborne assault. It applies, unless otherwise prescribed.

b. Ground Combat. Upon completion of the airborne assault or whenever the airborne division is employed in normal ground combat the infantry division standing operating procedure will apply with minor modifications.

c. Unit Procedures. Subordinate units issue standing operating procedures to conform.

2. ORGANIZATION

a. General. Division is organized for an airborne assault into an assault echelon, follow-up echelon, and a rear echelon.

b. The Assault Echelon is organized into three combat teams, division troops, and a division reserve. Each of these is moved in a parachute and an assault aircraft element. The organization is as follows:

CT 304:
- 304th Abn Inf
- 405th Abn FA Bn
- Co. A, 102d Abn Engr Bn

CT 305:
- 305th Abn Inf
- 406th Abn FA Bn
- Co. B, 102d Abn Engr Bn

CT 306:
- 306th Abn Inf
- 407th Abn FA Bn
- Co. C, 102d Abn Engr Bn

Division Troops:
Hq, 102d Abn Div
Hq & Hq Co, 102d Abn Div
102d Abn Sig Co
102d Abn MP Co
102d Abn Ord Maint Co
102d Abn QM Co
102d Abn Med Bn
Misc atch teams (intel, mil govt, trp carr ctl teams, TACPs, etc.)
Hq, 102d Abn Div Arty
Hq Btry, 102d Abn Div Arty
408th Abn FA Bn
102d Abn AA Bn
AT plat, 102d Abn Div
102d Abn Recon Co
102d Abn Engr Bn (less three cos)

Division Reserve:
One infantry battalion as designated.

c. (1) *Follow-up echelon* is composed of elements of the division which are not initially brought into combat (less rear echelons), but which join the assault echelon as soon as possible after the airhead has been established, or after link-up. These include—
(*a*) Division and unit vehicles and personnel.
(*b*) 102d Repl Co (less two platoons).
(*c*) 201st Tk Bn.
(*d*) 202d Tk Bn.
(2) The follow-up echelon moves by air, land, sea or any combination of the three. However, if the movement is only by air, definite restrictions are placed on the vehicles of division trains, and tank battalions may not be included.

d. *Rear Echelon* is composed of—
(1) Administrative and rear elements of all units.
(2) 102d Abn QM Prcht Maint Co.
(3) 102d Abn Div Band.
(4) Two platoons, 102d Repl Co.

3. PERSONNEL

a. Strengths, Records, and Reports. Consolidated returns for 24 hours ending 2400, initially to be submitted by 0900 following day

to combat team headquarters by units attached; to division headquarters by units included in division troops. On division order all returns to division headquarters for 24 hours ending 2400 by 0700 following day.

b. Replacements.

(1) Adjutant general responsible for arrangements for procurement, reception, processing, assignment, and forwarding. Supervise operations division replacement company.

(2) Replacements remain with division replacement company during the airborne assault and are moved forward with the follow-up echelon.

c. Prisoners of War.

(1) Prisoners of war initially retained by combat teams or other capturing troops.

(2) Provost marshal establishes division collecting point in vicinity division command post or airfield. Announces opening time by command channels.

(3) Prisoners of war by combat teams to division collecting points.

d. Morale and Personnel Services.

(1) Hold mail at Army post office when suspended.

(2) Report decorations to headquarters by 1200 daily commencing on D+1. Particular emphasis to be placed on recording outstanding action during airborne assault phase.

e. Civil Affairs-Military Government. Units hold civilians in place initially. Modifications later.

f. Procedures. Battlefield promotions and appointments to division headquarters by 1200 daily commencing D+1.

g. Interior Management. Quartering is unit responsibility. Coordinate with civil affairs officer when in towns.

h. Civilian Employees. Request for civilian labor to division headquarters by 1200 daily commencing D+1.

4. INTELLIGENCE

a. Reconnaissance and Observation.

(1) To be conducted aggressively to maximum distance situation permits.

(2) All requests for air missions to division G2.

(3) Patrols coordinated at each successive echelon.
(4) Rear area reconnaissance coordinated by division.
(5) Standard sound warnings improvised by units to alert troops in vicinity.
(6) Flash message reporting approach enemy mechanized, aviation, naval or landing craft, or airborne troops.

b. Measures for Handling Prisoners of War, Captured Documents, and Matériel.

(1) One interrogation prisoner of war team for each regiment or combat team. Interrogation prisoners of war by interrogation prisoner of war teams only. Key enemy officers and noncommissioned officers to prisoner of war collecting point after opened without delay. No food, water, or cigarettes to prisoners of war selected for interrogation prior to their interrogation. Prisoners of war and matériel will not be evacuated from airhead unless approval by division headquarters.
(2) Report number of prisoners of war carrying leaflets.

c. Counterintelligence.

(1) Troops will be constantly reminded to give name, rank, and serial number only, in event of capture.
(2) Marked maps or overlays will not be carried into airhead by assault echelon except as specifically authorized.
(3) Strict security discipline will be maintained in all radio and line telephone communications.
(4) Escapers and evaders.
(*a*) Escapers and evaders to division prisoner of war collecting point without delay for processing.
(*b*) Escape kits issued to troops to be collected on D+3 and returned to division headquarters as soon thereafter as practicable.

d. Reports and Distribution.

(1) (*a*) Flash messages by code as prescribed in signal operations instructions; otherwise in clear.
(*b*) Flash messages will be followed by urgent message giving available details.
(2) Units report information to division headquarters as obtained for first 12 hours after assault. Thereafter, unit reports 24 hours ending 1800, to division headquarters by 2200.

5. OPERATIONS

a. Security.

(1) Combat teams are responsible for security within their assigned areas.
(2) All command posts and supply installations will be organized to defend themselves.
(3) Division coordinates defense against mechanized, air, and airborne attacks.
(4) Contact will be made laterally from right to left between combat teams.

b. Air Movement. Under supervision of troop carrier commander, and as prescribed in air-movement table.

c. Assault and Initial Combat. On landing, priority of tasks:

(1) Assemble assault detachments and move to attack objectives.
(2) Clear drop zone locality of enemy.
(3) Reconnaissance elements move out to R and S line.
(4) Assemble combat teams and division troops.
(5) Coordinated attack on objectives.
(6) Occupy assigned phase lines.
(7) Destroy all enemy in sector.
(8) Coordinate defensive dispositions.

d. Subsequent Combat.

(1) Combat teams cease on division order. Attached units revert as prescribed (place and time).
(2) Maintain contact right to left.
(3) Active reconnaissance by all units.
(4) Prepare for normal ground operations.

6. LOGISTICS

a. Supply.

(1) *General.* During the airborne operation, supply is divided into the following echelons of supply:
  (*a*) Assault supply.
  (*b*) Follow-up supply.
  (*c*) Maintenance and build-up supply.
(2) *Class I.*
  (*a*) Three days' ration for each individual in assault supply for assault echelon.

(*b*) Ration cycle begins with supper. Distribution from division supply points. All units maintain one combat type ration for reserve.

(3) *Class III.* All units carry in assault supply fuel for vehicles to operate 300 miles immediately following airborne assault. Supply point distribution thereafter, on can-for-can basis. All units maintain expenditure records.

(4) *Class V.*

(*a*) Basic loads of ammunition to be carried as assault supply.

(*b*) After landing, units draw ammunition from ammunition supply point on transportation order approved by division ammunition officer.

(5) *Water.*

(*a*) Water to be placed in each plane carrying personnel for consumption en route.

(*b*) Each individual to have one full canteen of water and one bottle of water purification tablets.

(*c*) All water except that received from engineer water supply point will be considered contaminated.

(6) *Captured matériel and salvage.*

(*a*) Evacuate Air Force equipment as early as possible through quartermaster channels.

(*b*) All available captured or commandeered transportation to be reported immediately to division headquarters.

(*c*) Other captured matériel evacuate through maintenance and supply channels. Include in daily report.

b. Evacuation and Hospitalization.

(1) Division medical battalion prepare to hold casualties during assault phase.

(2) Units report location of aid station to division surgeon and commanding officer, medical battalion.

c. Transportation. Units furnish transportation on priorities established by G4.

d. Service. Maintenance.

(1) Division service units perform all services during assault phase.

(2) Field maintenance, by organic units.

(3) By nearest supporting unit after juncture.

(4) Technical service officers report locations of service and supply installations.

e. Miscellaneous. Unit logistical periodic reports to division G4 daily as of 1800 by 2400, commencing D+2.

7. COMMAND

a. Command Posts. After landing, in vicinity of drop or landing zones. During subsequent combat along predetermined axis. Report movement to new locations promptly.

b. Liaison Officers. Sent to division immediately after landing by infantry regiments, division reserve, and attached units. Laterally between combat teams or infantry regiments.

c. Signal Communication.

(1) Axis of signal communication for division and combat teams will be announced prior to landing.

(2) Detachment division signal company accompanies each combat team in the assault.

d. Orders.

(1) Brief operation orders will be limited in distribution to major units only; others informed by commanders or liaison officers.

(2) Distribution A when used includes the following:

No. of copies	*Unit*
3	Appropriate troop carrier units.
3	Appropriate communications zone section(s).
3	Appropriate tactical air force.
3	Appropriate tactical naval forces.
3	Airborne corps or army.
3	Army making ground juncture.
3	Corps making ground juncture.
1	Attached units.
4	Each infantry regiment or combat team.
6	Division artillery.
1	Each tank battalion.
1	Medical battalion.
1	Engineer battalion.
1	Division headquarters company.
1	Reconnaissance company.
1	Signal company.
1	Military police company.

No. of copies	*Unit*
1	Ordnance company.
1	Quartermaster company.
1	Antitank platoon.
1	Replacement company.
1	Parachute maintenance company.
1	Band.
1	Each general and special staff section.
3	File. (G3)

e. Attached, Supporting, or Assisting Units. Orders attaching a unit to another unit of a command or directing a unit to support or assist another unit or command carry authority for the units or commands concerned to communicate for the arrangement of pertinent details.

BAKER
Major General

Distribution: A
OFFICIAL:
/s/ Fox
G3

APPENDIX X

STANDING OPERATING PROCEDURE FOR AIRBORNE AND TROOP CARRIER UNITS

HEADQUARTERS_____THEATER

14 July 19__

OPERATION MEMORANDUM) :

NUMBER 12)

STANDING OPERATING PROCEDURE
FOR AIRBORNE AND TROOP CARRIER UNITS

1. OBJECT.

The object of this memorandum is to provide a common basis upon which the training and operations of airborne and troop carrier units can be conducted, and to define the responsibilities of the joint airborne force, the airborne, and troop carrier commanders.

[1] See appendix VII.
[2] See appendix XIII.

SECTION I

LIAISON

2. GENERAL.

Upon receipt of directives or orders from the joint airborne force to participate in training or combat missions, the commanding officers of the airborne and troop carrier units concerned will immediately exchange experienced and competent liaison officers to act as advisors and coordinators on all matters of common interest. Such exchange of liaison officers will prevail through all echelons to include battalion/group level, or lower when required.

3. DUTIES. The liaison officer will—

a. Represent his unit commander at the headquarters to which he is assigned.

b. Act as adviser to the commanding officer to whom he is assigned on matters pertaining to his own command.

c. Coordinate all matters involving dual responsibility such as—

(1) Joint staff meetings.
(2) Joint briefings.
(3) Availability of equipment.
(4) Provision and implementation of plans, marshalling, and parking and loading diagrams.
(5) Examination of all parallel orders to ensure complete agreement of plans and arrangements.
(6) Procurement of equipment and facilities belonging to his own command which are required by the command to which he is assigned.
(7) In the case of lower echelons, to act as airfield coordinator in conjunction with his opposite number.
(8) Preparation of joint reports.

SECTION II

STAFF PROCEDURE

4. PLANNING.

a. The sequence of planning and details of matters requiring decision are set out in the SCHEDULE OF PLANNING. This schedule will be adhered to throughout all stages of planning.

b. At the earliest possible date after receipt of directives or orders to participate in joint training or combat missions, and after certain initial studies, the commanding officers involved will meet in a joint planning conference, accompanied by such staff

officers, unit commanders and liaison officers as are necessary, and will arrive at complete agreement on all matters pertaining to the mission and its accomplishment.

5. AIR-MOVEMENT TABLE.

The issuance of the completed air-movement table with the associated assignments of transporting and transported units to airfields must be accomplished at this stage in order that detailed planning and arrangements of lower echelons may be completed at the earliest possible date.

6. FORMS.

a. Common forms for air movement—tables, loading tables, and load manifests will be employed. Additional forms for internal and domestic procedure may be used at the discretion of the formation/unit commanders concerned.

b. Standard forms to be employed are listed below:

(1) Air-movement table.
(2) Basic planning guide.
(3) Aircraft-allotment table.
(4) Air-landing table.
(5) Load manifest—personnel.
(6) Load manifest—cargo.

c. An inspection form listing the points to be checked will be posted in each airplane.

SECTION III

OPERATING PROCEDURE

7. AIRFIELD ORGANIZATION.

a. A joint command post, plainly marked will be established at each airfield for the use of the commanders involved. It will normally be in close proximity to the field operations office. There will be telephone communications between the command post, the troop and air-crew billeting areas, loading areas, operations, and the airfield switchboard.

b. The command post will be provided from air force sources with a radio equipped vehicle, tuned on flying control channels, for the use of the troop carrier commander or his liaison officer.

8. LOADING OF AIRCRAFT.

a. The troop carrier unit commander will provide the airborne unit commander, through the liaison officer, with a parking diagram of all aircraft which will show by number the location of aircraft and the sequence of take-off.

b. All aircraft will be numbered on both sides of the fuselage in chalk. Spare aircraft will be similarly marked "SPARE."

c. Guides will be provided from airborne units and will be posted at a convenient place, on or near each airfield, under the control of the airborne liaison officer, to direct each truckload of airborne troops to its respective aircraft. Each truck will be numbered to correspond with the aircraft for which it is intended.

d. A reserve of planes will be maintained at each airfield. Priority allotment will be made by the airborne liaison officer. The time of take-off of allotted reserve aircraft is dependent on the situation at the moment and is the responsibility of the troop carrier unit commander.

9. DISPATCHING ARRANGEMENTS.

Aircraft will be dispatched by serials. The serial leader will file the necessary clearance for all aircraft in his serial, and will be responsible for meeting the scheduled take-off time. The troop carrier unit will furnish the base operations officer with a complete time schedule, list of aircraft numbers, and sequence of take-offs in order that an accurate log of departures may be maintained.

10. PATHFINDING AND NAVIGATION.

Navigation and pathfinding activities will be in accordance with Appendix "B" to this memorandum.

11. FORMATIONS.

a. Standard formations are prescribed in order to expedite training and to simplify procedures. However, it is recognized that special situations may demand a variation from the standard. Such variations will be mutually agreed to by the next higher headquarters.

b. Standard formations—

(1) Three—aircraft V's in trail.

(2) Nine—aircraft V of V's.

c. Jump altitude will be not less than 400 feet by day and 500 feet by night above the highest terrain in the drop zone.

12. TROOP PROCEDURE ABOARD AIRCRAFT, INCLUDING SIGNALS.

a. Twenty minutes from the drop zone, the aircraft commander will alert the jumpmaster who will make an initial check of men and equipment.

b. Four minutes from the drop zone, aircraft commander will turn on RED light.

c. Upon reaching the initial point, the serial leader will begin a gradual slow-down so that the formation will cross the drop zone at the desired speed.

d. When over the drop zone, with the aircraft in the proper attitude, the pilot will turn on the GREEN light as the "go" signal. The flashing on of the GREEN light is a command to "go" at that instant.

e. All light signals will be confirmed verbally over the intercommunication system.

SECTION IV

JOINT RESPONSIBILITIES OF AIRBORNE AND TROOP CARRIER COMMANDERS

13. GENERAL.

Unit commanders will be jointly responsible for reaching complete agreement and understanding on all points contained in the Planning Schedule (App. "A") and will issue the necessary orders in such detail as to enable commanders of lower units to proceed to training and arrangements with the fullest understanding of the problems involved.

14. REQUIREMENTS.

Commanding officers of units on battalion and group level will require that—

a. Pilots and troop commanders understand and prepare the appropriate parts of all forms.

b. Each pilot signs his copy of the loading manifest and has it available upon the arrival of the airborne troops. Each troop commander will have his copy of the form completed upon arrival at the aircraft and will compare with the pilot for correctness of assignment.

c. Pilot and jumpmaster carry out the prescribed inspection of aircraft and equipment and complete the loading manifest by signing in the proper place certifying that the inspection has been made.

d. Upon completion of the loading manifest, two copies are left with the airborne liaison officer, one for air records and one for ground records. Additional copies will be furnished as required by higher headquarters in each situation. One copy will be retained by the troop commander in order that he may make a check of his personnel after landing on the drop zone, or landing zone.

SECTION V

RESPONSIBILITIES OF THE TROOP CARRIER COMMANDER

15. TROOP CARRIER COMMANDERS.

A troop carrier commander will be responsible for the execution of all items contained in the checklist of the planning schedule.

16. GROUP AND SQUADRON COMMANDERS.

Commanding officers of groups and squadrons will be responsible for—

a. Proper functioning of lights, monorail, intercommunication, heavy drop equipment, and the like.

b. Providing all Air Force accessories and special equipment required by an airborne unit for a particular operation, for example, loading ramps and tie-down devices.

c. Providing a qualified technician for each aircraft to provide technical assistance and advice to the loading unit.

d. Conducting air/sea rescue drills and ditching procedure.

e. Completion of all forms applicable to their units.

17. PRIOR TO ENPLANING.

a. The aircraft commander will accompany the jumpmaster in the inspection of the aircraft as outlined on the aircraft inspection card posted in the aircraft. He will also be present during the loading of the containers and equipment.

b. The pilot will make final mechanical check of the aircraft 30 minutes prior to time of enplaning.

c. The pilot will immediately advise his commanding officer and the airborne liaison officer if his aircraft will not be able to take off on schedule, and will assist in the transfer of the load to the spare aircraft assigned.

18. DURING THE DROP.

a. The pilot will maintain the prescribed altitude, attitude, and speed prescribed for each type of aircraft.

b. The pilot will give the warning and jump signals.

c. The crew chief will comply with instructions concerning activation of the monorail system. The pilot actuates the release mechanism which initiates ejection of the heavy drop equipment.

d. The crew chief will pull in static lines, close the outer paratainer well doors, stow static lines, and return them to proper organization at base airfield.

SECTION VI

RESPONSIBILITIES OF THE AIRBORNE COMMANDER

19. AIRBORNE COMMANDERS.

The airborne commander will be responsible for the execution of all items contained in the checklist of the planning schedule insofar as they apply to his level. He will reach complete agreement with his opposite troop carrier commander on all matters.

20. AIRBORNE UNIT COMMANDERS.

Commanding officers of airborne battalions and separate units will be responsible for—

a. Packing of equipment containers and loading to prevent incorrect distribution of weight and improper balance of the aircraft.

b. Loading, lashing, and balancing loads in accordance with established procedures, in the presence of the pilot or his designated representative.

c. Completion of airborne portion of load manifest form.

d. Procuring and fitting of parachutes for both troops and containers.

e. Briefing of troops.

f. Movement of troops to take-off airfields.

BY COMMAND OF GENERAL SMITH:

JOHN SMITH
Lieutenant General, U.S. Army
Chief of Staff

APPENDIX "B"
to Op Memo No. 12
dated 14 Jul 19

NAVIGATION AND EMPLOYMENT OF PATHFINDER UNITS

1. GENERAL.

The organizational structure and delineation of responsibility outlined herein are at variance with those presently in effect. Separate action is being taken to accomplish revisions which will allow the application of the procedures outlined.

2. ORGANIZATION.

a. Airborne units. Airborne units will be responsible for

furnishing security for the pathfinder teams when prescribed by the joint airborne force commander.

b. Air. Pathfinder units consisting of pathfinder teams and specially equipped aircraft and crews will be assigned to troop carrier air force, or the senior troop carrier air force, or the senior troop carrier organization within the joint force.

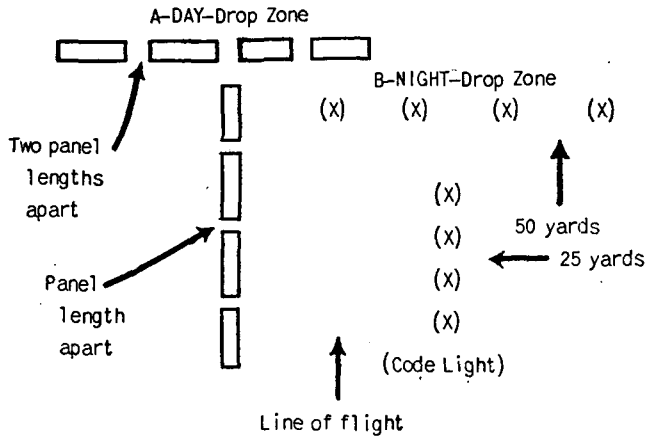
3. PROCEDURE.

a. Two or three aircraft with two or three identical pathfinder teams for each drop zone or landing zone will precede the first serial of the main effort by not less than 30 minutes, the exact time interval being established by both airborne and air commanders. The leading group of the first serial of the main effort into each drop zone or landing zone will be prepared to drop as scheduled even though the pathfinder teams may have been neutralized, and will, in addition, be prepared to reestablish pathfinder aids for subsequent groups.

b. Marking of drop zones.

(1) By day.—The standard day marking for each drop zone will consist of a panel "T", a code letter, and smoke signals. Both the "T" and the code letter (which letter is to identify the drop zone and distinguish it from others in the same area) will be constructed from panels or ground strips, each panel measuring 3 feet by about 15 feet. The color and size of the "T" and of the letter will be dependent upon the size of the cleared area, vegetation, and any trees obstructing vision, and will be agreed upon by the airborne and air commanders. Smoke will be employed to indicate the position of the "T". The "T" will be positioned with due regard to wind speed and direction, shape and size of drop zone, the formation being flown, so as readily to be observed from aircraft running in from Target RV to drop zone. The identifying letter will be placed in any suitable position in close proximity to the "T". The radar beacon will be placed within a radius of 100 yards from the head of the "T." Smoke signals will be placed near the base of the stem of the "T" with due regard to the wind so that smoke will not obscure the "T" or the identifying letter. The axis of the "T" will be parallel to the line of flight, with approach up to the stem. The jump signal will be given when the leader of the formation is over or level with the head of the "T."

Eight panel strips will be used, four across the top of the "T," and four forming the stem. Panels will be placed one panel length apart in the stem and two panel lengths apart in the cross bar (see A below).

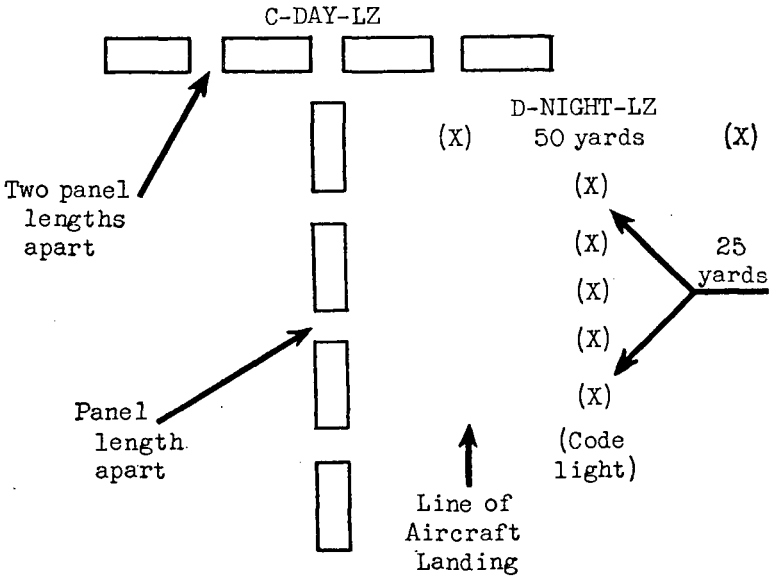


(2) By night.—The standard night marking for each drop zone will consist of lights forming a "T," with four Halophone or infrared lights across the top, and four Halophone or infrared lights forming the stem. Lights in the cross bar are spaced 50 yards apart and lights in the stem are spaced 25 yards apart. The color of the lights in the "T" will be agreed upon by the troop carrier and airborne commanders. The tail light of the "T" will be the code light. A red light will be positioned 500 yards from the left extremity of the cross bar of the "T" and a green light 500 yards from the right extremity of the cross bar of the "T" as viewed in the direction of flight. The radar beacon will be placed within a radius of 100 yards from the head of the "T" (B above).

c. Marking of landing zones.

(1) By day.—The day marking of landing zones will be by panel "T"s, panel code letters, and colored smoke. Panels will measure 12 to 15 feet by 3 feet. The "T" for landing zones will be laid with the stem parallel to the line of assault aircraft landing, and so as to be readily observed from aircraft running in from Target RV to landing zones. The direction of landing so indicated will be not more than 90° out of wind, the amount depending on wind strength and on configuration and

shape of landing zones, the best compromise being adopted. Smoke will be placed in the same manner as for a drop zone. The radar beacon will be placed in such a position relative to the direction of run-in of aircraft from Target RV to landing zone that assault aircraft can be brought in to a point where they can execute a 90° (or not more than 180° turn, preferably left hand) to land into the wind. Code letters marking landing zones will be prepared from panels similar to those used for making "T"s (C below).



(2) By night.—(The following marking system for landing zones by night presupposes sufficient light for assault aircraft pilots to distinguish individual fields for landing as briefed). Night marking of landing zones will consist of lights forming a "T" with two Halophone or infrared lights across the top 50 yards apart, and five Halophone or infrared lights 25 yards apart forming the stem. The color of the lights in the "T" at each landing zone to be agreed between the airborne and air commanders, to meet conditions encountered. The tail light of the "T" will be the code light. Lights will be provided with 180° screening. The position of the "T" and of the radar beacon will be the same as in the marking of landing zones by day (D above).

d. Marking for subsequent group. Provisions will be made for securing and maintaining pathfinder teams and their equipment in operation until all serials have arrived.

4. METHODS OF NAVIGATION.

a. Initial pathfinder aircraft will employ accurate dead reckoning (DR) and map reading, closely checked by radar aids and the use of special drop zone maps for the location of drop zones and landing zones.

b. Main serials will be led to the drop zones and landing zones by accurate DR and radar aids, and utilize beacons for the exact location of the areas.

5. AIRBORNE RESUPPLY DROPPING ZONES.

Resupply drop zones will normally be marked in the same way as paratroop drop zones. Where correct equipment is not available, the same configuration will be used with improvised equipment.

APPENDIX "C"
to Opn Memo No. 12
dated 14 July 19

STANDING OPERATING PROCEDURE FOR FOLLOW-UP SUPPLY OF AIRBORNE FORCES

1. PLANNING.

The operational plan for the delivery of airborne troops into battle by air will normally include scheduled missions for the serial resupply.

2. DEFINITIONS.

a. Automatic follow-up supply missions are those which are scheduled in the operational plan which are known in advance to be necessary and are to be flown as scheduled, without additional confirmation.

b. On call follow-up supply missions are those which are scheduled in the operational plan as being probably or possibly necessary and on which the actual dispatch of the aircraft is subject to confirmation from the unit being supplied.

c. Emergency follow-up supply missions are those not scheduled in the operational plan, but which arise from unforseen circumstances.

3. METHODS OF CONFIRMATION.

On call resupply missions will be confirmed by radio/WT or

ground panels, or both, in accordance with codes specified in the operational plan.

a. By radio W/T—At a stated interval each day, or when possible, the airborne unit will signal that the next scheduled on-call resupply mission will be flown. Reconnaissance planes should arrive over the probable drop area at a time stated in the operational plan to get panel confirmation of the dispatch of such resupply mission. Five minutes before the reconnaissance planes are due to arrive, and during the time that they are over the drop zone area, the airborne unit will display appropriate panels indicating that the next scheduled resupply mission is required or not required.

b. If automatic resupply is required, the panel will also indicate to the reconnaissance pilot the dropping point or points. One or both of the reconnaissance aircraft will reply to the panel with a Very pistol cartridge of any color.

4. METHODS OF DELIVERING SUPPLIES.

Supplies may be delivered by parachute (monorail, heavy equipment drop), free fall or by air landing.

5. MARKING OF SUPPLY DROPPING ZONES.

Supply dropping zones will be marked in accordance with the standard markings for drop zones and landing zones, as specified in appendix "B," herewith. Where equipment specified for such marking is not available, the same configuration will be used with any means which can be improvised.

6. LOADING AND BRIEFING.

The loading of aircraft and briefing of crews, for on-call resupply missions will normally proceed as scheduled. If no confirmation is received from the airborne unit that the on-call resupply mission is required, the mission will not be dispatched. The operational plan will indicate the probable location of the drop area, but the final briefing for the dropping point will be based on the radio/WT signal or the reconnaissance report on the ground panels.

7. WEATHER.

Dispatch of aircraft on reconnaissance or resupply missions will be dependent on weather conditions. Because of the need of airborne troops for aerial resupply, cancellation of missions will only be made when weather conditions are such that successful flights are known to be absolutely impossible.

8. EMERGENCY RESUPPLY.

It will be normal procedure for the operational plan to contain resupply provisions for all situations which are likely to arise. Due to unforeseen circumstances which develop in the course of a battle, there may be a need for emergency resupply. In such cases, ground panel signals of the airborne unit to the reconnaissance aircraft will be in accordance with a prescribed panel code to be agreed between the airborne and troop carrier units concerned. This agreed code will be a part of the operational plan.

* * * * * * *

APPENDIX XI

OPERATION ORDER—AIRBORNE DIVISION

(Accompanying Overlay Omitted)

(CLASSIFICATION)

102d Abn Div
SALISBURY, ENGLAND
101300 May 19__

OpnO 12

Maps: EUROPE, 1:250,000, CHERBOURG; FRANCE, 1:50,000, 6E/6, 6E/5, 5F/5, 5F/2.

Task Orgn:

Assault ech—Maj Gen Lewis, Comd

Div trp—

Hq, 102d Abn Div
Hq co, 102d Abn Div
102d Abn Sig Co
102d Abn MP Co
102d Abn Ord Maint Co
102d Abn QM Co
102d Abn Med Bn
5202d CIC Det (AB, BB)
225th IPW Team (BB)
246th Intrpr Team (BJ)
256th Tltr Team (BF)
5210th Mil Govt Plat (AA, AE, CB, DA, EA, ED)
2 trp carr ctl teams
1 AirLO
803d Mbl Surg Hosp
AT Plat, 102d Abn Div
102d Abn Recon Co. (-)
102d Abn Engr Bn (-)
Hq, 102d Abn Div Arty
Hq Btry, 102d Abn Div Arty
408th Abn FA Bn
102d Abn AA Bn (-)

CT 304—Col Brown, Comd

304th Abn Inf
405th Abn FA Bn
Co A, 102d Abn Engr Bn
Btry A, 102d Abn AA Bn
1st Plat, 102d Abn Recon Co
4 TACP

CT 305—Col Smith, Comd

305th Abn Inf
406th Abn FA Bn
Co B, 102d Abn Engr Bn
Btry B, 102d Abn AA Bn
2d Plat, 102d Abn Recon Co
4 TACP

CT 306—Col Roberts, Comd

306th Abn Inf (-)
407th Abn FA Bn
Co C, 102d Abn Engr Bn
Btry C, 102d Abn AA Bn
3 TACP

Div res—Lt Col James, Comd

3d Bn, 306th Abn Inf
1 TACP

Follow-up ech—Lt Col Jones, Comd

203d Tk Bn
204th Tk Bn
1st Plat, 102d Repl Co
Follow-up elements of assault units

Rear ech—Lt Col Rogers, Comd

102d Repl Co (-)
102d Abn QM Prcht Maint Co
102d Abn Div Band
Div and unit rear ech

1. *a.* Annex 1, Intel.

   b. (1) First Army atk D-day, seizes CHERBOURG Peninsula and initiates opn to S.

(2) First Abn TF assaults by air D-day, seizes and holds line CAEN-ISIGNY-CARENTAN-STE MERE EGLISE, blocks en mvmt to beaches.

(*a*) Brit 3 Abn Corps lands vic of CAEN and assists landings of Brit Second Army.

(*b*) III Corps (abn) assists landing of V and VII Corps, protects their juncture, and facilitates their adv to W and S.

(*c*) 103d Abn Div lands at H–5 hr, vic of STE MERE EGLISE. Prevents en mvmt W of MERDERET River.

(*d*) 104th Abn Div lands at H–5 hr, vic of ISIGNY. Prevents en mvmt N and W of VIRE River.

(3) 1st Trp Carr Comd furnishes air transportation, sup, and evac.

(4) Elms of 3d Fleet and 1st TAC spt the assault.

(5) Annex 2, Naval Gunfire Spt.
Annex 3, Air Spt.
Annex 4, Air-Sea Rescue.

2. *a.* 102d Abn Div lands beginning at H–5 hr vic of CARENTAN.

(1) Seizes CARENTAN, crossings over DOUVE River and VIRE ET TAUTE Canal.

(2) Seizes ahd line and blocks mvmt en from S, E, and W.

(3) Contacts 103d and 104th Abn Div.

(4) Assists adv of V Corps to S.

3. *a.* CT 304—

(1) Land in sector beginning at H–5 hr.

(2) Seize, organize, and defend obj 1.

(3) Seize and hold psn along ahd line in sector which will block mvmt of en from N and W.

(4) Prep to assist CT 306 in seizure of CARENTAN.

(5) Contact 103d Abn Div to N.

b. CT 305—

(1) Land in sector beginning at H–5 hr.

(2) Seize, organize, and defend obj 2 and 3.

(3) Seize and hold psn along ahd line in sector which will block mvmt of en from N and W.

(4) Contact 104th Abn Div to E.

c. CT 306 (-) :

(1) Land in sector beginning at H–5 hr.
(2) Seize and hold CARENTAN.

d. Div arty (-) :

(1) 408th Abn FA Bn : G/S.
(2) 102d Abn AA Bn (-) : Upon establishment of centralized ctl, protect div arty and LZB.
(3) Annex 9, Arty.

e. 102d Abn Recon Co (-) : Recon to PERIERS.

f. 102d Abn Engr Bn (-) : Annex 10, Engr.

g. AT plat, 102d Abn Div : Recon and be prep on div order, to occupy AT psn with priority to sector of CT 304.

h. Follow-up ech : Annex 11, Priority and Composition of Overland Mvmt.

i. Div res :

(1) Assemble vic LZB.
(2) Clear LZB and protect landing of div trp.
(3) Recon and be prep for employment in fol priority :
  (*a*) Sector of CT 304, Plan RED.
  (*b*) Sector of CT 305, Plan BLACK.
  (*c*) Sector of CT 306, Plan BLUE.

x. (1) Annex 5, Air Mvmt Table.
(2) Annex 6, Opn Overlay.
(3) Annex 7, Div Assembly Plan.
(4) Annex 8, Div Alternate Plans.
(5) Annex 12, Catk Plans.
(6) Annex 13, AT Plan.
(7) CT atch less recon co elms cease on order when comm for centralized ctl are established.
(8) Serviceable transportation of all types will be captured or commandeered and rept immediately.
(9) No wpn smaller than cal .50 will be fired at acft unless atk.
(10) D-day, H-hr ; To be announced.
(11) Postponement or cancellation : Only on auth of theater comd. If given, notification via 1st Trp Carr Comd channels, confirmation to follow immediately.

4. AdminO 12.

5. *a.* Index 2, SOI. Annex 14, Sig.

b. CPs:

(1) Div: Announce opening by rad.

(2) Units: Rept loc and axis of mvmt when established in ahd.

LEWIS
Maj Gen

Annexes: 1—Intel
2—Naval Gunfire Spt
3—Air Spt
4—Air-Sea Rescue
5—Air-Mvmt Table
6—Opn Overlay
7—Div Assembly Plan
8—Div Alternate Plans
9—Arty
10—Engr
11—Priority and Composition of Sea and Overland Mvmt
12—Catk Plans
13—AT Plan
14—Sig

Distr: A
Brit 3 Abn Corps

OFL:

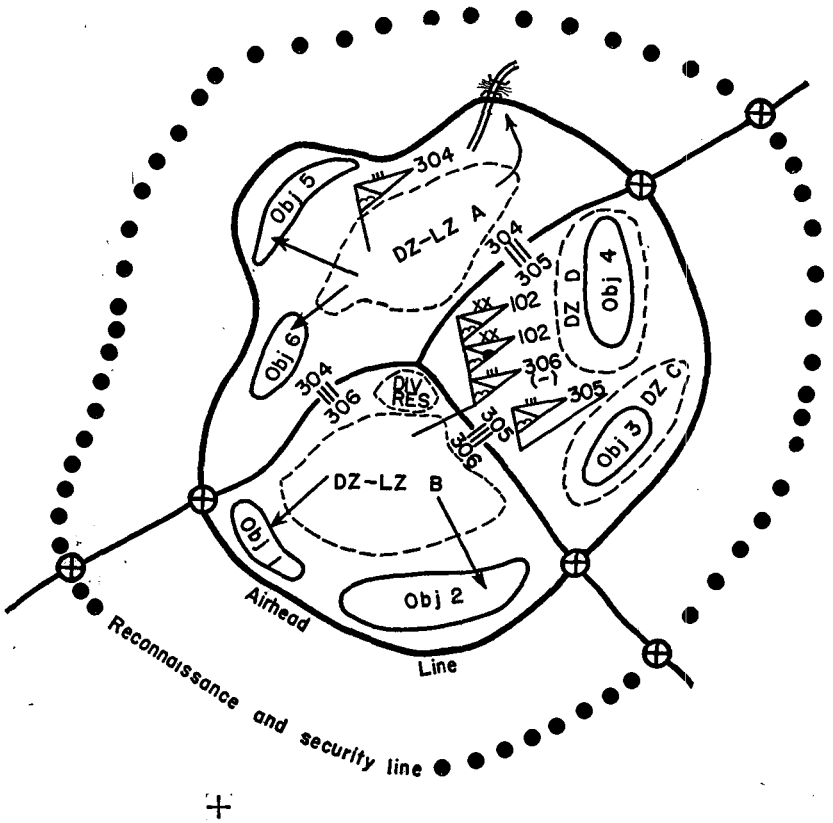
/s/ KIRK
G3

OPERATION OVERLAY—AIRBORNE DIVISION AIRHEAD
(SCHEMATIC)

(CLASSIFICATION)

Headquarters
Place
Date and time

Annex__ (Opn Overlay) to OpnO__
Maps:



Note 1. If numerous DZs and LZs are being used they are placed on a separate overlay in order to avoid a mass of detail on the operation overlay.

Note 2. Successive phase lines or objectives may be shown if desired.

Commander

Distribution:
Authentication:

(CLASSIFICATION)

Figure 9. Airhead, airborne division.

APPENDIX XII
AIRCRAFT ASSIGNMENT WORK SHEET

1. GENERAL

a. The aircraft assignment work sheet, table IV, is a form devised to assist the airborne division G3 in preparing an air movement table (app. XIII) for an assault landing.

b. The work sheet allows the shifting of units and subunits between serials, drop or landing zones, or departure airfields in order to arrive at balanced serials and maintain tactical integrity.

2. INSTRUCTIONS FOR USE OF WORK SHEET

a. General. Two sheets are used; one for the parachute elements, and one for the assault aircraft elements.

b. Column 1, Units. Enter all organic and attached units, detachments, or teams in any convenient order.

c. Column 2, Standard Lift. Enter the number of parachute airplanes or assault aircraft required for each unit by reference to standard aircraft requirement tables.

d. Column 3, Revised Lift. If the number of aircraft assigned varies from standard, enter the revised assignment of aircraft.

e. Column 4, Drop Zone-Landing Zone. Enter the drop or landing zone on which each unit is to land. This information is based on the landing plan.

f. Column 15, Recapitulation. The number of troop carrier wings assigned is entered. If this is not known, it is estimated by dividing the average number of operational aircraft per wing into the total number assigned. The number of airfields assigned for marshalling is entered if known, otherwise, one airfield per troop carrier wing is entered. The number of serials is normally estimated by dividing the total number of aircraft allocated for the mission by the number of aircraft specified for a parachute or assault transport serial under the conditions visualized for the operation. The organization for landing is entered under task organization. The drop or landing zone assigned to each tactical grouping is noted and cross-checked against column 2. The total number of serials can now be broken down into the serials for each

drop or landing zone by noting the information under task organization and columns 1, 2, 3, and 4. Line 1 is then filled out.

g. Serial 1. Serial 1 is now formed by first entering in column 5 opposite the major tactical unit listed in column 1, the aircraft figure shown in column 3. If this figure is too large or too small, it is adjusted by attaching or detaching tactical subunits. The number of aircraft for each serial can be varied within limits to preserve tactical integrity of airborne units.

h. Line 56. Line 56 is self-explanatory.

i. Line 57. Line 57 permits the rearrangement of serials to readjust to the landing plan.

j. Line 58, Departure Field Desired. Serials are grouped by departure airfields to facilitate briefing. Normally, one or two serials marshal at each field.

Table IV. Parachute Assault Aircraft Element, Aircraft Assignment Work Sheet

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1					Drop Zone — Landing Zone.										
2	Unit	Standard lift	Revised lift	DZ/LZ											Recapitulation
3					Serial	Serial	Serial	Serial	Serial	Serial	Serial	Serial	Serial	Serial	
4															Number of wings assigned =
5															Number of airfields assigned =
6															Number of serials =
7															Number serials to DZ-LZ =
8															Number serials to DZ-LZ =
9															Number serials to DZ-LZ =
10															TASK ORGANIZATION FOR MISSION:
11															
12															
13															
14															
15															
16															
17															
18															
51															
52															
53															
54															
55															
56	Totals (Final number of aircraft per serial)														
57	Order of landing priority														
58	Departure fields desired														

APPENDIX XIII
LOADING FORMS

1. BASIC PLANNING GUIDE—TABLE V

a. Purpose. The basic planning guide shown below is a report prepared by ground units to determine the aircraft required for an airborne operation. The completed form shows the exact status of a unit in personnel, vehicles, equipment, and supply. The form is first prepared by commanders of lower units and consolidated by higher units controlling and planning the operation. Thus, the ground forces commander has available for planning purposes the exact status of the personnel and equipment of his entire force.

b. Detailed Explanation of the Basic Planning Guide Form.

(1) *Heading.* This information is completed by the headquarters preparing the form.

(2) *Organization.* The subordinate units of an organization are listed. The battalion commander lists each company in the battalion. The regimental commander lists each battalion and separate company, or any attached units. The division lists each organic and attached unit in the division.

(3) *Personnel.*

(*a*) *First echelon.* The commander will be advised as to the approximate number of parachute planes or assault aircraft assigned to his unit. He may be informed that his unit will move by plane; if so, all personnel going in the move would be listed under this column.

(*b*) *Follow-up echelon.* The personnel and equipment that are not air-landed or moved in the initial air lift but will join the parent organization at the earliest or at a specified date during the operation.

(*c*) *Rear echelon.* The personnel who will remain at the base camp or similar installation. They will not necessarily move with the overland detail but may be moved forward at a later time.

(*d*) *Ineffectives.* The personnel who are absent from the organization and will not be present for the operation.

This will include personnel who are absent in the hospital, absent without leave, and the like. They may join the organization at a later date. However, if they are absent at the time of the preparation of the form, they will be carried in the ineffectives column.

(4) *Vehicles, equipment, and supply.* The columns under this heading are used to show the breakdown of matériel for the operation. The number of each type of vehicle as well as heavy or bulky equipment and supplies, will be listed in these columns (note 3).

(5) *Remarks column.* Any additional information or notes concerning personnel or equipment.

Table V. Basic Planning Guide

Operation:_____ Hq:_____

Date:_____

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	Personnel								Vehicles, equipment, and supply									
	First echelon				Follow-up air, land, sea		Rear ech	Ineffectives		First echelon				Follow-up air, land, sea		Rear ech		
Organization	Parachute Plane		Assault aircraft						Type	Parachute Plane		Assault aircraft						Remarks
	Agg No	Wt	Agg No	Wt	Agg No	Wt	Agg	Agg		No	Wt	No	Wt	No	Wt	No	Wt	

Note 1. Aggregate number includes officer and enlisted personnel.

Note 2. Weight of personnel includes weight of individual equipment.

Note 3. Equipment and supply listed together with vehicles since vehicles are normally lifted combat loaded. If desired, these items may be listed separately by revising this form, extending additional columns to the right similar to 10–18.

2. AIRCRAFT ALLOTMENT TABLE—TABLE VI

The aircraft allotment table is used to suballot the aircraft assigned to a unit to its subordinate units. An example of the form is shown on next page. The form is self-explanatory.

Table VI. Aircraft Allotment Table

OPERATION_____ HEADQUARTERS_____

DATE_____

UNIT	NO AND TYPE OF AIRCRAFT			

3. AIR MOVEMENT TABLE—TABLE VII

a. Purpose. The air movement table is a form prepared by the army commander in coordination with the air force commander. This form, used as an annex to the operation order, implements the allocation of aircraft to the organizations of the army units to be lifted. It further designates the number and type of aircraft in each serial and specifies the departure area, time of loading, and take-off.

b. Detailed Explanation of the Air Movement Table Form.

(1) *Heading.* The headquarters of the unit preparing the form will complete the heading.

(2) *Serial number.* Each serial will be numbered consecutively in the order of flight.

(3) *Air Force units.*

(*a*) *Carrier unit.* The designation of the troop carrier unit transporting or furnishing the aircraft in each serial.

(*b*) *Serial commander.* The senior air force officer in the serial.

(*c*) *Number and type planes.* The exact number of planes and type of planes that will actually fly in the serial will be shown in this column.

(4) *Ground forces.*

(*a*) *Number of planes required.* The number of airplanes required to transport the unit shown in column 7.

(*b*) *Employment.* Parachute or air-landed.

(*c*) *Unit loaded.* The airborne unit being transported will be shown in this column.

(*d*) *Serial commander.* The senior airborne officer in the serial is the serial commander.

(*e*) *Depart from airfield.* The name of the departure airfield.

(*f*) *Hour loading begins.* The time established by the air force and ground forces commanders. A minimum of 2 hours is necessary.

(*g*) *Stations.* The time the passengers and equipment and the crew of the aircraft are loaded and ready for the take-off.

(*h*) *Take-off.* The time the aircraft is actually scheduled to depart from the airfield.

(*i*) *Objective.* The name or designation of the arrival or landing airfield.

c. Example. Table VII is an extract from a division air-movement table.

Table VII. Air Movement Table

Annex_____to OpnO_____.

Maps: Hq:

Place:

Date and time:

1	2	3	4	5	6	7	8	9	10	11	12	13
	Air Force Units			Army Forces								
Serial No	Carr unit	Serial Comd	No/ type planes	No of planes required	Employment	Unit loaded	Serial Comd	Depart from afld	Hr loading begins	Sta	Take-off	Obj
1	434th Gp	Lt Col Doe	54 C-119	43	Parachute	306th Abn Inf Regt	Col Smith	A-5	0600 D-day	0745 D-day	0800 D-day	DZ A
				8	Parachute	Co A, 102d Abn Engr Bn						
				3	Parachute	Div Hq Co						
6	439th Gp	Lt Col Roe	55 C-123	40	Air-land	408th Arty Bn	Lt Col Janes	A-6	1400 D-day	1430 D-day	1450 D-day	LZ B
				15	Air-land	102d Abn AA Bn						

4. AIR-LOADING TABLE—TABLE VIII

a. Purpose. This form is a data sheet used by ground unit commanders. It may be transmitted to the air force commander for information. It lists the load that goes into each aircraft. The form is completed at company level and forwarded to battalion head-

quarters. Certain information that goes on the form, such as the serial designation and air force organization, is obtained from the air-movement table. The form may be used as an annex to a battalion operation order.

b. Detailed Explanation of the Form.

(1) *Heading.* The headquarters of the unit preparing the form will complete the heading.

(2) *Serial number.* The same serial number as given in the air movement table for the unit preparing the form.

(3) *AF unit.* The same as given in the air movement table.

(4) *Chalk number of plane.* The number chalked on the aircraft at the departure airfield for identification purposes. All aircraft in each serial are numbered consecutively. If two or more serials are departing from the same departure airfield, the chalk numbers will run consecutively from the first plane in the first serial to the last plane in the last serial.

(5) *Army unit.* The same as given in the air-movement table.

(6) *Plane, loaded with.* The items of equipment and the number of personnel loaded in the aircraft are listed in these columns.

(7) *Remarks.* The weight of equipment and personnel and any notations to be made will be listed in this column.

c. Example. Table VIII shows the form completed by an infantry battalion for a rifle company of the battalion. The information for the heading and the air force unit was taken from the air-movement table.

Table VIII. Air-Loading Table

Annex__to OpnO_____.

Departure airfield — Hq:

Loading starts — Place:

Stations — Date:

Serial No.	*AF unit*	*Chalk number of prcht plane or assault acft*	*Army unit*	*Prcht plane loaded with*	*Assault acft loaded with*	*Remarks, including sp equip needed for loading and total payload*

5. FLIGHT MANIFEST—TABLE IX

a. Purpose. The flight manifest is an exact record of personnel in each aircraft by name, rank, and serial number. It also gives a brief description of the equipment loaded, with the station or rack number as loaded in the aircraft. Load computations for personnel and equipment are also listed. A separate form is made for each aircraft and a copy is normally distributed as follows:

(1) The senior ground forces member in the aircraft.
(2) The next senior ground forces member in the aircraft.
(3) The pilot of the aircraft.
(4) Company or similar unit commander of the personnel being transported in the aircraft.
(5) Battalion or regimental commander.
(6) The ground unit liaison officer.
(7) The air force commander.
(8) The departure airdrome.

b. Preparation. The senior ground forces member in each aircraft is responsible for the preparation of the flight manifest for his own aircraft.

c. Detailed Explanation of the Flight Manifest Form.

(1) *Heading.* Complete only the terms that are applicable.
(2) *Personnel loaded section.* Complete each column as indicated by the heading thereon. The names of personnel should be listed opposite the number of the seat that he actually occupies.
(3) *Data on aircraft section.* The information in this section is required by the senior ground forces member of the aircraft for weight and balance computations. The information must be secured from the pilot of the aircraft for which the form is being prepared.
(4) *Aircraft and equipment loaded.* Each separate item of equipment that is loaded at different station numbers must be shown. Separate computations must be made for all personnel and equipment loaded at different station numbers.
(5) *Computations.* The total weight divided into the total moments will give the station number of the loaded aircraft. From this number the senior ground forces member must determine if the aircraft is safe to fly.
(6) *Signatures.* The form must be signed by the pilot and the senior ground forces member transported in the aircraft.

d. Example. Table IX illustrates the use of the flight manifest form for a typical cargo airplane.

Table IX. Flight Manifest

~~Parachute jump~~ Air Landed Mvmt ~~Assault Aircraft Mvmt~~

Plane No 1 ~~Stick No.~~ _____ Departure Airfield Lawson

~~Assault aircraft~~

Pilot Lt J. J. Jones Serial 1 ~~DZ~~ or LZ "W"

Trp Comd Lt R. R. Ray Date 8 May 1947

Personnel Loaded:

Seat	Name and Rank		ASN	Orgn	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20	Brown, B. B.	PFC	36234567	Co A 96 Inf	
21					
22	Blue, S. S.	Pvt	34562633	"	
23					
24	Rayburn, J. C.	Cpl	35246777	"	
25					
26	Smith, N. N.	Sgt	63546747	"	
27					
28	Jackson, T. T.	PFC	64537646	"	
29					
30	Ray, R. R.	1st Lt	0273375	"	
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					

Note 1. Strike out inapplicable terms in heading.

Note 2. One completed copy of the flight manifest must remain at the departure airdrome.

Table IX.—Continued

Data on Aircraft:

Type acft	
CG unloaded	
Fwd CG limit	
Desirable CG	
Aft CG limit	
Max take-off weight	
Max landing weight	
Basic weight	
Crew weight	
Gas weight (6 lb per gal)	
Oil weight (7.5 lb per gal)	
Acft ready for loading	40,410

Aircraft and Equipment Loaded:

No	*Item*	*Weight*	*Sta No*	*Moment*
1	Aircraft, w/crew	40,410	326	13,073,660
2	1 trk ¼-ton	2,453	188	461,164
3	1 trk ¼-ton	2,453	305	748,165
4	1 trk ¼-ton	2,453	437	1,071,961
5	6 men, w/equipment	1,440	386	555,840
		49,209		15,910,790
		Total		

Computations:

CG = (324) Sta No.

49,209 | 15,910,790

Total weight | Total Moment

INSPECTION MADE AND COMPUTATIONS VERIFIED:

s/R. R. Ray, 1st Lt, Inf
Troop cmd

s/J. J. Jones, 1st Lt, USAF
Pilot

APPENDIX XIV

ADMINISTRATIVE ORDER—AIRBORNE DIVISION

CLASSIFICATION

102d Abn Div
NEWBERRY, ENGLAND
181200 May 19_____

Administrative Order 1

Maps: FRANCE, 1:50,000, LA HAYE DU PUITS, PERIERS, VALOGNES, ISIGNY.

1. SUPPLY.

a. Class I.

(1) *Rations.*

(a) Three assault type rations per individual in assault echelon will be carried in assault echelon.

(b) Four combat type rations per individual for all units will be carried in follow-up echelon.

(c) Navy will furnish rations to follow-up echelon while en route.

(2) Seven days gratuitous issue items will be issued prior to departure.

(3) A 3-day supply of hospital rations will be carried, based on expected casualties.

(4) Division supply point 388929 open H + 10 hours.

b. Classes II and IV.

(1) Items specified in appendix B (omitted) will be carried.

(2) Division supply points open D + 1.

(a) Quartermaster at 388929.

(b) Ordnance at 388929.

(c) Medical at Clearing station 387927.

(d) Engineer at 390926.

(e) Signal at 388928.

c. Class III.

(1) Tanks of all vehicles will be filled.

(2) Carried in vehicle.

Truck ¼-ton—1 full 5-gallon drum.
Truck ¾-ton—3 full 5-gallon drums.
Truck 2½-ton and over 6 full 5-gallon drums.
All vehicles 5 quarts engine oil and filled grease gun.

(3) Division supply point at 388929 open H + 10 hours.

d. Class V.

(1) Full basic loads of ammunition will be carried.

(2) Division ammunition supply point at 388929.

(3) Division ammunition office at 388929.

e. Water.

(1) All individuals in assault and follow-up echelon will carry filled canteens and one bottle of (50) halazone tablets.

(2) Each aircraft will carry one 5-gallon can of water for consumption en route to objective area.

(3) One 5-gallon can of water per five individuals will be carried for consumption in objective area.

(4) Division engineer will establish and operate two water supply points in objective area. Report location to G4 when established.

f. Captured matériel.

(1) All captured enemy equipment will be reported to G4. Units may utilize captured equipment, especially vehicles, to augment own equipment.

(2) All captured supplies will be placed under guard and reported to G4.

(3) No enemy stocks of gasoline will be used in other than enemy vehicles until tested.

g. Salvage.

(1) Collection point at 388929; unit evacuation.

(2) Units will recover all canopies and supply containers from drop zone immediately.

h. Accompanying supplies follow-up echelon. Two transportation truck companies loaded with balanced supplies all classes will arrive in division maintenance area target date (D + 2).

i. Follow-up supply.

(1) Two days of supply packaged for air drop will be delivered to drop zone on D + 1 on an automatic basis, unless canceled.

(2) Two days of supply packaged for air drop will be available at departure air bases on an on-call basis.

2. EVACUATION AND HOSPITALIZATION. *Evacuation.*
Clearing station initially vicinity HIESVILLE (387927).

3. TRANSPORTATION. *Highway.*

a. Traffic control posts.

(1) HIESVILLE (387927).

(2) ST. COME DE MONT (362918).

(3) BLOSVILLE (363929).

b. Traffic control headquarters HIESVILLE (387929).

c. Only blackout lights at night.

4. SERVICE. *Technical services.*

a. 102d Abn Engr Bn at 390926 operate engineer supply point.

b. 102d Abn Med Bn vicinity HIESVILLE (387927).

c. 102d Abn Ord Maint Co at 388929 operates maintenance shop and division ammunition supply point.

d. 102d Abn QM Co vicinity HIESVILLE (388929) operates classes I and III supply point and collecting point.

5. PERSONNEL.

a. Strengths, records, and reports.

(1) Units will enter the objective area at authorized Tables of Organization strength.

(2) Overstrengths will be attached to 102d Repl Co initially.

(3) Units will route all personnel records and reports of an administrative nature through division command post, vicinity HIESVILLE (387927) for transmission to division rear echelon, NEWBURY, UK. For disposition of other personnel records and reports see division standing operating procedure.

b. Replacements.

Authorized overstrengths will be for Operation HELL DIVER.

c. Discipline, law and order.

(1) The collection and disposition of stragglers is initially the responsibility of the regimental combat teams.

(2) Division straggler line to be announced later.

d. Prisoners of war.

(1) The collection and disposition of prisoners of war is initially the responsibility of the regimental combat teams.

(2) Division collecting point vicinity HIESVILLE (376922). Time of opening to be announced later.

e. Burials and graves registration.

(1) The collection and burial of dead is initially a regimental combat team responsibility.

(2) Division cemetery location to be announced later.

6. MISCELLANEOUS.

a. Headquarters. Rear echelon NEWBURY, UK.

b. Protection. Division reserve furnish protection for division maintenance area.

JONES
Major General

Distribution: A

OFFICIAL:
/s/Downs
G4

APPENDIX XV

MOUNTING AND MARSHALLING AIRBORNE DIVISION

CLASSIFICATION

STANDING OPERATING PROCEDURE 38

Southern Base Section
SALISBURY, ENGLAND
101400 Mar 19 ———

1. GENERAL.

a. Purpose. This standing operating procedure standardizes normal procedures for mounting and marshalling airborne operations; it applies unless otherwise prescribed.

b. Unit procedures. Units designated for an airborne operation issue standing operating procedures to conform.

2. ORGANIZATION.

Southern Base Section
XVI District
XVII District
XVIII District
XIX District

3. PERSONNEL.

a. Strengths. Provide static personnel for the operation of all marshalling camps, to include a camp commander, supply officer, cooks, guards, and other administrative personnel. Strengths of static staffs to be approximately 10 percent of strength of transient strengths at camps.

b. Morale.

(1) Army Exchange Service. Camp commanders issue 1 week's gratuitous issue items to all individuals of transient units immediately prior to departure.

(2) Chaplain. Provide facilities for unit chaplains to hold service in camps.

(3) Postal. Provide postal service to transient units while in marshalling camps.

(4) Special services. Arrange for special services facilities at all camps.

4. INTELLIGENCE.

Counterintelligence.

a. Southern Base Section furnishes districts one Counter Intelligence Corps officer for each camp.

b. Insure that proper security measures are coordinated and enforced by transient units and static personnel.

c. Maintain liaison between transient units and air forces security personnel in order that information as to security plans is uniform throughout marshalling area.

d. Issue detailed instructions to marshalling camp commanders and transient unit commanders in marshalling camps regarding the following:

(1) Security lectures.

(2) Mail and telegraph restrictions.

(3) Disposition of unauthorized articles and documents collected from transient personnel.

(4) Possession of identification tags by all personnel of transient units.

(5) Isolation of transient troops from outside personnel.

(6) Disposition of maps, documents, and letters abandoned by transient personnel upon their departure.

e. Insure that transient units institute a rigid interior guard of marshalling camp area.

5. OPERATIONS.

a. Assembly areas and marshalling camps. Allocate areas to transient units for use as bivouac or assembly areas prior to their movement to marshalling camps.

b. Movement. Issue necessary movement instructions for move of transient units to marshalling camps.

c. Training. Provide necessary training facilities for small-scale training such as rifle ranges and sand tables.

6. LOGISTICS.

a. General.

(1) Establish marshalling camps on or in the near vicinity of departure air bases.

(2) Provide complete facilities for housing, messing, and housekeeping at all marshalling camps for use by transient units immediately before an operation.

(3) Logistically support transient units while in bivouac or assembly areas.

b. Supply.

(1) *All technical services.*

(a) Provide small stocks of supply at all camps to replace any accompanying supplies lost, damaged, or expended en route to camp.

(b) Provide requested items of unit air supply, in desired amounts, at prescribed rear air bases for delivery to airborne units in airhead by the air forces.

(2) *Engineer.*

(a) Provide adequate water supply at camps.

(b) Provide necessary construction materials for construction of camps.

(3) *Medical.* Provide necessary expendable supplies for operation of camp dispensaries.

(4) *Ordnance.* Provide small stocks of ammunition for training purposes.

(5) *Quartermaster.*

(a) Provide Type A rations for transient and static troops at marshalling camps.

(b) Provide for sufficient class III supplies at all camps for use of transient units while in camps.

(c) Provide necessary kitchen and messing equipment, tentage, and other class II supplies essential for housekeeping purposes at all camps.

(6) *Miscellaneous.*

(a) All supplies and equipment other than that belonging to transient units turned in to salvage agencies, through appropriate technical service channels.

(b) All technical services maintain adequate records of supplies shipped to rear air bases for delivery to units in the airhead, for follow-up supply.

(c) If Southern Base Section is involved in furnishing normal supply to rear bases, the procedures prescribed by communications zone standing operating procedure for supply by air will be followed.

c. Evacuation and hospitalization.

(1) Provide medical service by establishing dispensaries at all camps.

(2) Provide necessary evacuation facilities for each camp.

(3) Provide for hospitalization facilities at nearby general hospitals. Personnel hospitalized during briefing will be isolated until D-day.

d. Transportation.

(1) Provide movement instructions for rail and truck movements to marshalling camps of transient units.

(2) Provide transportation for personnel which cannot be carried on unit vehicles.

(3) Provide transportation for the return to home station of the personal equipment of transient units.

(4) Provide transportation for the movement of all unit air supplies for delivery to rear air bases or to railheads in the vicinity thereof.

(5) Provide necessary transportation for use of transient units at camps.

e. Service.

(1) *Engineer.*

(a) Provide construction of required facilities including mess halls, storage buildings, hardstandings, showers, latrines, water lines, and tentage frames at camps. Existing facilities utilized to the fullest extent.

(b) Provide for necessary fire-fighting facilities.

(2) *Ordnance.* Provide for necessary maintenance facilities for transient units.

(3) *Signal.* Provide necessary communication service within camps.

(4) *Finance.*

(a) Assist finance officers of transient units in exchanging currency in the possession of individuals for appropriate currency of the airhead.

(b) Assist in making partial payment to troops prior to departure.

7. COMMAND.

a. Liaison officers. Districts maintain liaison with transient units prior to movement to marshalling camps, and while units are in camps.

b. Signal communication. Radio silence within marshalling camps during period operation is being mounted.

MILNER
Major General

Distribution: A

OFFICIAL:

Jones
G 3

APPENDIX XVI
ARMY SERVICE AREA

1. RELATIONSHIP—ARMY SERVICE AREA TO ARMY AIRHEAD

Figure 10 shows the relationship of the army service area to an army airhead composed of two corps, each consisting of three divisions. An independent corps airhead would be similar with the division rear boundary being the outer perimeter of the service area. The actual size of the airhead, and the service area contained therein, would vary depending on the nature of the terrain and capabilities of the enemy. With the advent of track landing gear and assault aircraft, landing strips can be located in the corps and division areas.

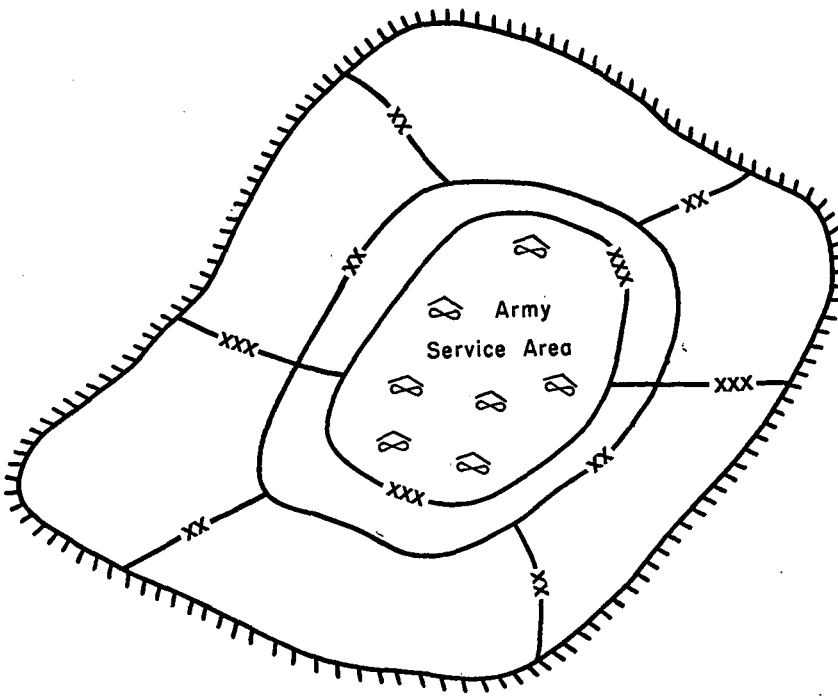


Figure 10. Schematic diagram of an army airhead.

2. INSTALLATIONS

Figure 11 shows the type installations which are located within the army service area. Because of the circular shape and constricted size of the airhead, maintenance area type installations are interspersed throughout the service area, rather than being contained in one maintenance area within the service area. Army classes I, III, and V supply points and army evacuation hospitals, which are normally located forward of the corps rear boundary, will, within an airhead, normally be located within the army service area to provide access to all units. The number of installations required depends on the size of the airhead, the roadnet within the airhead, and the number of units within the airhead.

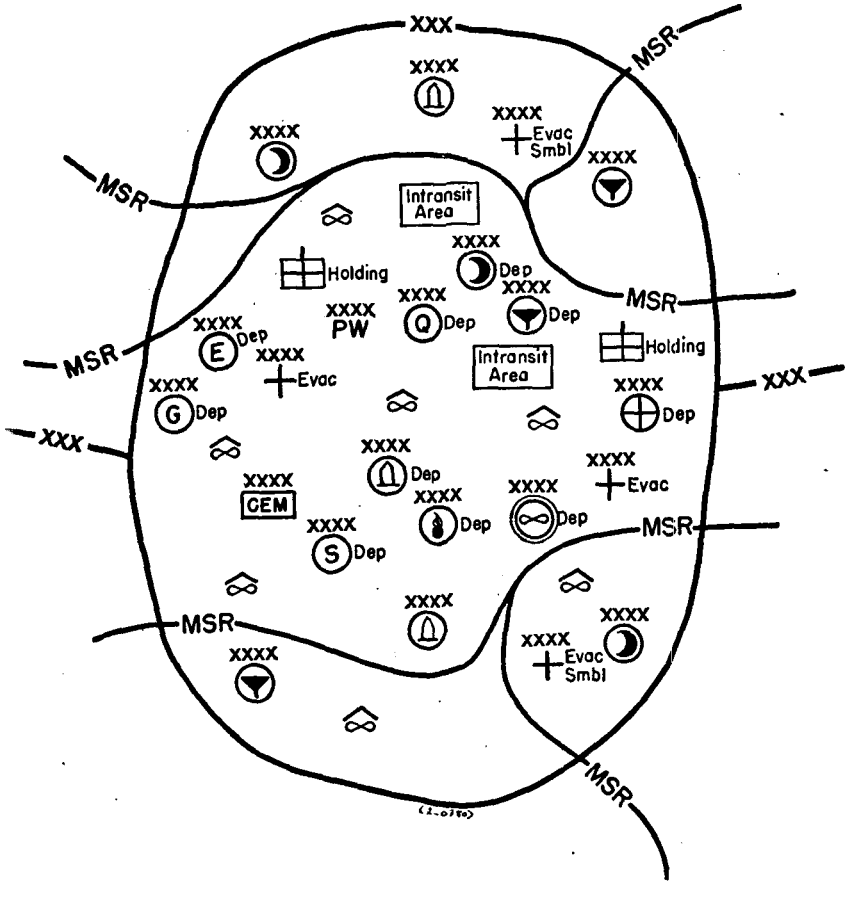


Figure 11. Army service area within airhead.

3. UNLOADING AND INTRANSIT AREAS

a. All personnel, supplies, and equipment must be rapidly unloaded from aircraft and removed from the airfield as quickly as possible. The schematic sketch of the unloading area shows a method of expeditiously unloading aircraft by the use of several unloading bays.

b. Troops disembarked from aircraft can be assembled in staging areas located near airfields and then moved to their destinations in the airhead.

c. Normally, supplies and equipment will be moved directly to army depots. Intransit areas furnish temporary storage facilities for mixed supply shipments, from which they are moved to the proper supply depots or supply points.

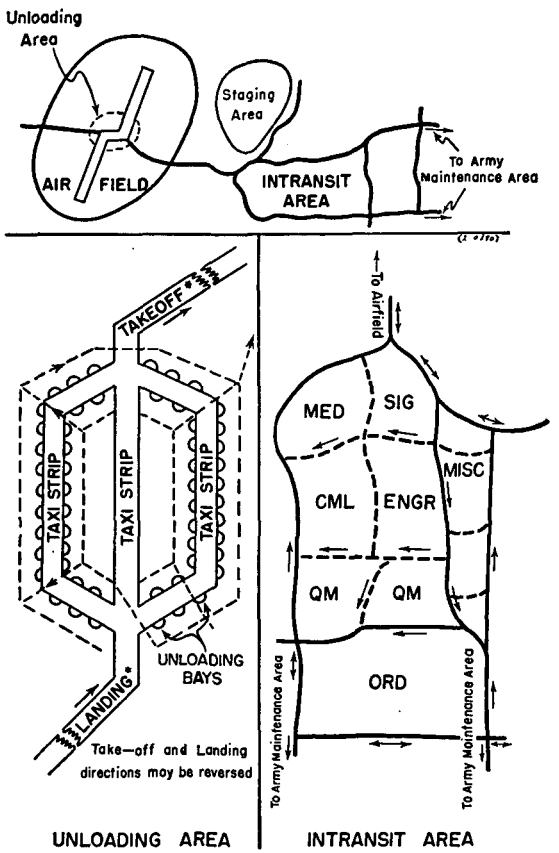


Figure 12. Unloading and intransit areas within an airhead.

APPENDIX XVII

INTELLIGENCE ANNEX—CORPS (AIRBORNE)

CLASSIFICATION

I Corps (abn)
CLARK FIELD, PI
101900Z Apr 19__

Annex 4 (Intelligence) to Operation Order 6.

Maps: RYUKU-RETTO, 1:250,000, OKINAWA JIMA.
RYUKU-RETTO, 1:50,000, NAHA IRABARUN.

1. SUMMARY OF ENEMY SITUATION. See I Corps Intelligence Estimate, 221000Z Mar__, and appendixes A, B, and C.

2. ESSENTIAL ELEMENTS OF INFORMATION.

a. Throughout planning and operations:

(1) What is the nature and extent of the enemy's chemical and biological warfare potential? Include location, type, and amount of chemical stores.

(2) What is the condition of airfields and landing areas in the objective area?

(3) What is the type and condition of all roads and bridges?

b. Prior to D-day, H-hour:

(1) What is the type, extent, and location of antiairborne obstacles, artificial and natural, in the selected landing and drop zones? Where are suitable areas for alternate drop and landing zones?

(2) What is the strength, composition, identification, and disposition of enemy forces on OKINAWA? Include armor, guided-missile troops, and installations. Specifically, has the enemy—

(a) Concentrated his forces in the proposed landing areas in the southern one-third of the island?

(b) Established a perimeter defense of the southern one-third of the island?

(c) Located any forces in the northern two-thirds of the island?

(3) Will the enemy reinforce his present garrison prior to our landing? If so, at what rate, and how?

(4) Can the enemy attack our troop carrier aircraft with aircraft, antiaircraft guns, or guided missiles during the flight to the objective area? If so, from where, and in what strength?

(5) Can the enemy attack our troops as they drop and before they organize? If so, with what troops, from where, and in what strength?

(6) Will the enemy attack our landing areas by air? If so, in what strength?

c. After D-day, H-hour:

(1) Will the enemy counterattack after we organize in our landing areas? If so, when, from where, and in what strength? Special attention is directed to a possible counterattack from the south.

(2) Will the enemy withdraw from the vicinity of the landing area? If so, in which direction will he retire, and what delaying positions can he use? Specific attention is directed to the possible withdrawal to the high ground at 859965 (1:50,000).

(3) What is the condition of II Corps landing beach area? Include type, extent, location of defenses, obstacles not already located and general conditions of beaches and exits.

(4) What is the location of guided-missile installations still in the hands, of the enemy at time of landing of II Corps which can fire on the transport and beach areas?

3. RECONNAISSANCE AND OBSERVATION MISSIONS.

a. Orders to subordinate and attached units. In general all units will make every effort within the limit of their capabilities to report information bearing on the essential elements of information as announced. Specific orders are as follows:

(1) *101st Abn Div:*

(a) Report as obtained all information of counterattacks.

(b) Report as obtained all indications of withdrawal by the enemy, particularly to high ground at 859965 (1:50,000). Include information on direction of such withdrawal and location of possible delaying positions.

(c) Report as obtained and not later than D + 2 the type and extent of obstacles and defenses not already located in and behind that portion of II Corps assault beaches within your zone; general condition of beaches and exits therefrom.

(d) Report as obtained type and condition of roads and bridges on that portion of the main west coast highway within your zone. Indicate any other roads and bridges in your zone which are in usable condition.

(e) Report upon capture condition of YONTAN Airfield and location and condition of other possible sites for auxiliary landing fields in your zone.

(f) Report as obtained but no later than D + 2 location of enemy guided-missile installations capable of firing on the transport and beach areas of II Corps.

(2) *102d Abn Div:*

(a) Report as obtained all indications of enemy counterattacks. Specific attention is directed to the possible counterattack from the south.

(b) Report as obtained all indications of withdrawal by the enemy to include information concerning direction of withdrawals and location of possible delaying positions.

(c) Report as obtained and not later than D + 2 the type and extent of obstacles and defenses not already located in and behind that portion of II Corps assault beaches within your zone; general condition of beaches and exits therefrom.

(d) Report as obtained type and condition of roads and bridges on that portion of the main west coast highway within your zone. Indicate any other roads and bridges in your zone which are in usable condition.

(e) Report upon capture condition KADENA Airfield and location and condition of other possible sites for auxiliary landing fields in your zone.

(f) Report as obtained but no later than D + 2 location of enemy guided-missile installations capable of firing on the transport and beach areas of II Corps.

(3) *3d Inf Div:*

(a) Be prepared to execute detailed reconnaissance of rocket launching sites in zone "R" after assembly.

(b) Be prepared to initiate reconnaissance within the O–1 line and north or south thereof on call.

(4) *Corps artillery:*

(a) Report as obtained all massing or forward movement of artillery which might indicate a counterattack by the enemy.

(b) Report as obtained all indications of withdrawal by the enemy to include information concerning direction of withdrawals and location of possible delaying positions.

(c) Report as obtained but no later than D + 2 location of enemy guided-missile installations capable of firing on the transport and beach areas of II Corps.

(5) *701st AAA Brig:* Report as obtained but no later than D + 2 location of enemy guided-missile installations capable of firing on the transport and beach areas of II Corps.

(6) *535th Engr C Gp:*

(a) Be prepared prior to D + 2 to reconnoiter II Corps assault beach area and report condition of beach area and exits, obstacles, and defenses.

(b) Report upon capture condition of YONTAN and KADENA Airfields and location and condition of other possible sites for auxiliary landing fields in I Corps zone.

b. Requests to higher, adjacent, and cooperating units.

(1) First Army is requested to provide continuously prior to enplaning time in the PHILIPPINES:

(a) All information concerning reinforcement by the enemy of the objective area.

(b) Photo cover of selected drop and landing zones as outlined in paragraph 5*b*(4), this appendix, and all information regarding antiairborne obstacles and conditions of the terrain in the landing areas.

(c) Identification of enemy units with strengths, compositions, dispositions, and movements affecting the I Corps objective area. Specific attention is invited to armor, and guided-missile troops and installations.

(d) Information concerning antiaircraft defenses and enemy aircraft capable of interfering with our movement to the objective area.

(e) Information concerning enemy naval forces capable of attacking our forces in the objective area.

(2) First Army is requested to provide as obtained after our landing information concerning location of enemy reserves and troop movement on OKINAWA.

(3) First TAF is requested to provide at least four air reconnaissance missions daily to report as obtained location and movements of enemy reserves on OKINAWA from D-day to D + 3.

4. MEASURES FOR HANDLING PRISONERS, CAPTURED DOCUMENTS, AND MATÉRIEL.

a. Prisoners of war.

(1) Captured air crew and guided missile personnel and prisoners of war of rank of colonel or higher will be reported immediately to this headquarters without prior interrogation beyond that necessary to establish their identity.

(2) Under no circumstances will prisoners be evacuated from the objective area without prior concurrence of corps G2.

(3) For routine handling of prisoners of war, see FM 30–15.

b. Captured documents.

(1) All captured documents will be delivered to the nearest unit intelligence officer. After field examination they will be forwarded to corps G2. However, documents found in crashed aircraft or on captured air personnel will be evacuated with the prisoners of war and not retained by ground units.

(2) Individuals desiring to retain documents of military value will attach their names and Army post office addresses to such documents prior to forwarding. Such documents will be returned when they are deemed to be no longer of military value.

(3) All captured enemy documents relating to American prisoners of war, internees, or any US nationals that have evaded capture by the enemy or escaped from enemy control will be forwarded to corps G2 without delay.

(4) See memorandum *Handling of Documents*, I Corps, for classification of documents *A*, *B*, and *C* (omitted). All documents classified *A* and *B* will be forwarded to corps G2 as soon as possible after they have ceased to be of immediate tactical use to lower echelons. Documents

classified *C* may be destroyed by division G2s or made available for souvenir purposes.

c. Captured matériel.

(1) Technical service intelligence teams will be employed to determine desirability and use of enemy matériel for intelligence purposes.

(a) Name plates on captured enemy matériel will not be removed by other than technical service intelligence team personnel.

(b) Technical service intelligence teams will be permitted to enter all captured dumps and salvage yards and remove such items as are required.

(c) All field tests of captured matériel will be conducted under the supervision of technical service intelligence team personnel.

(2) Samples of all newly modified or new weapons will be forwarded to technical service intelligence teams with notification in writing to corps G2.

(3) Individuals desiring to retain minor equipment of military value will attach their names and Army post office addresses to such equipment prior to forwarding. Such equipment will be returned when it is deemed to be no longer of military value.

(4) Guided-missile launching sites and control mechanisms will be reported immediately.

(5) For further information concerning disposition of captured enemy equipment and supplies, see Annex 7, Logistics, to Operation Order 6.

5. MAPS AND PHOTOS.

a. Maps, terrain models, charts. Appendix D (omitted).

b. Air photos.

(1) Basic cover of the target area will be issued automatically to units. Appendix D (omitted).

(2) Requests for all photographic missions, contact prints and additional copies of air photos of the operational area will be submitted to corps G2.

(3) A joint air photo center (JAPC) will be established at the appropriate air force installation in the PHILIPPINES. Negatives of all photos will be delivered to JAPC by designated air photographic agencies operating in our combat area.

(4) The following air photos have been requested and will be furnished appropriate subordinate units automatically when prepared and received:

(a) Basic cover of operational areas.

(b) Large-scale cover from D–30 throughout the operation.

(c) Daily front-line cover from D-day throughout operation.

(d) Annotated mosaic of drop and landing zones of scale approximately 1:10,000.

(e) Mosaics of scale 1:20,000 of drop and landing zones.

(f) Obliques of approach and objective areas.

6. COUNTERINTELLIGENCE.

a. Prior to air movement. Appendix E, Security Measures for Mounting Airborne Operations.

b. After movement. (Omitted.)

7. REPORTS AND DISTRIBUTION.

a. The following reports will be submitted by divisions and separate units:

Report	*How submitted*	*Time*
(1) Spot reports	Most expeditious means	At once.
(2) Intelligence summaries	By TWX or radio	As of 1200 and 2400 daily.
(3) Periodic intelligence report	Formal written report, to be submitted by most rapid means	Divisions, and separate units under corps close as of 1800 daily, reach corps headquarters by 1930 daily.
(4) Periodic CIC	Written form.	At close of 10th, 20th, 30th day of each month.
(5) CIC situation reports	As directed by TM 30–215 *Counter Intelligence Corps.*	

b. Appropriate intelligence publications of higher headquarters to include intelligence estimates, summaries, information bulletins, and special studies will be distributed as received.

c. Distribution of radio form intelligence reports such as combined situation—intelligence reports (COSINTREPS) and intelligence summaries (ISUMS) will be arranged as appropriate for direct transmission to subordinate units. ISUMS will cover enemy action during the period emphasizing applicable items listed under periodic reports.

d. Division G2s are authorized to arrange special liaison with A2s of supporting troop carrier units.

JONES
Major General

Appendixes:

A—Tactical Study of the Area of Operations (omitted)

B—Enemy Airfield and Landing Area Study (omitted)

C—Weather Service Plan (omitted)

D—Map and Photo Plan (omitted)

E—Security Measures for Mounting Airborne Operations. (For example, see app XVIII.)

Distribution: (Same for operation order)

OFFICIAL:

/s/ Smith
G2

APPENDIX XVIII

SECURITY MEASURES FOR MOUNTING AIRBORNE OPERATIONS

CLASSIFICATION

_____Corps (abn)
CLARK FIELD, PI
101900Z Apr____

Appendix B (Security Measures for Mounting Airborne Operations) to Annex 4 (Intel) to Operation Order 6.

1. PURPOSE. To deny the enemy all vital information relating to the objective areas and the known or surmised dates of airborne operations together with the strength of forces, methods, and secret equipment to be employed.

2. RESPONSIBILITIES.

   a. Security is always a responsibility of unit commanders.

   b. Necessary static security in the PHILIPPINES outside of the US military establishment will be provided for by COMWESFOR.

3. PRELIMINARY AND INITIAL PLANNING PHASES.

   a. Strict security discipline will be maintained in offices, and elsewhere, with particular reference to handling of documents and maps, telephone conversations, loose talk, and speculation which might convey information as to the objectives and dates of operations proposed, or the strength of forces and methods to be employed.

   b. A basic security principle is that the dissemination of vital information will be limited to those who actually require it in the performance of their duties and will be given any individual only as soon as is necessary for the accomplishment of the duty.

   c. An adequate and effective pass system will be instituted, kept up to date, and enforced in accordance with corps pass plan (omitted).

   d. Unit and base censorship will become effective on D–70.

e. Duly accredited war correspondents and photographers will be furnished information subject to the same restrictions as military personnel. Their credentials will be first examined and approved by corps or division G2s who will impose the necessary special restrictions on such personnel and notify all concerned. They will be briefed only if accompanying units into combat and then only to the necessary extent and at the last reasonable time prior to H-hour. They will be sealed with troops.

f. Civilians will be barred from viewing special combat or operational training. War correspondents, photographers, visiting US and Allied military personnel, will be barred from combat training exercises involving units larger than battalions, except on specific authority of this headquarters.

g. Shoulder patches and unit vehicle markings will be removed on or before D–60 and will not be used until further orders.

h. All major breaches of security will be reported at once to the Assistant Chief of Staff, G2 _____Corps (abn).

4. GENERAL PLANNING PHASE.

a. General. Entrance to headquarters, troop bivouac, and training areas will be permitted only to personnel on official business, and then only after a determination has been made that their business is both official and essential. Red Cross and other semimilitary personnel (including accredited correspondents) will be considered in the same category as military personnel.

b. Premovement period.

(1) Before departure of troops an advance deadline will be announced for the conclusion of any leaves, furloughs, or passes.

(2) Farewells and farewell parties of any description are forbidden.

(3) A collection will be made from all personnel participating in the mission prior to movement from base section to marshalling or enplaning areas of letters, diaries, papers indicating Army post office numbers, or any other military information.

(4) Censorship regulations will be reviewed by unit censors who will exercise great care over soldiers' mail, noting

particularly if soldiers have endeavored in any way to reveal a planned movement.

c. Movement to marshalling areas. (Departure airfields, seaports.)

(1) The exact date and destination of troops moving to marshalling areas or departure airfields will be made known only to such persons and at such time as necessary.

(2) Communication between troops moving to marshalling areas or departure airfields and civilians will be forbidden.

d. In marshalling areas.

(1) *General.*

(a) As a matter of policy the senior Air Force officer is responsible for the security of the departure field, while unit airborne commanders are responsible for the security of their own personnel and areas assigned to them.

(b) To effect and coordinate security measures on departure airfields, direct communication is authorized between divisions and the appropriate US Air Force personnel, communications zone, and base section personnel.

(c) Unit commanders will place interior guards around camps in marshalling areas to prevent entrance of unauthorized persons and to restrict troops to the area when required. Wire fencing will be erected by base section.

(d) Communications zone military police and Counter Intelligence Corps agents and civilian police, as available, will assist in maintaining exterior security around the marshalling and enplaning areas and in neighboring towns.

(e) Civilian personnel such as American Red Cross and war correspondents will be subject to the same restrictions as tactical troops.

(f) Blackout and camouflage discipline will be maintained.

(g) All personnel sent to hospitals after departure from home stations and prior to commitment to action, will be admonished regarding security precautions, and will be isolated from all other patients until the operation has been made public.

(2) *Briefing of troops.*

(a) All briefing prior to D-day will be conducted in sealed areas. Once briefing has begun, all personnel, except those on official duties, will be restricted to sealed areas. Division commanders will provide for issue of a special pass for personnel entering or leaving camps on official duties.

(b) After D-day, the necessary briefing will take place within the marshalling areas or departure airfield wherever it is most convenient to units, consistent with the security required.

(c) Huts, tents, or requisitioned buildings within marshalling area camps, or departure airfields will be used for briefing. Briefing buildings or tents will be guarded when in use and when they contain classified information.

(d) Briefing will take place at the latest practicable moment.

(e) Spot checks will be made of personnel for diaries, documents, and other papers carried on their persons.

(f) Care will be exercised in the handling of maps used to brief troops and such maps will be kept away from static troops and unauthorized to see them.

(3) *Post-briefing.*

(a) Only official telephone calls and telegrams, approved by division commanders will be permitted after briefing starts.

(b) Letters written in marshalling areas and on departure airfields will be unit censored and placed in bags and held until after departure of troops. All letters will be collected prior to embarkation or enplaning.

(c) No orders will be carried in the assault air echelons. Only such marked maps and overlays as are specifically authorized by division headquarters will be carried. Intelligence documents or lists will not be carried in this echelon except when transcribed on nitro paper. Detailed and precise instructions in these matters will be prescribed and rigidly enforced by unit commanders.

e. Movement of briefed troops to enplaning points. From the time briefed troops leave home stations until enplaning

they will be segregated from civilians and all other troops. Where possible, a noncommissioned officer will be assigned to each truck or small marching unit, with specific orders to enforce the following measures.

(1) Once mounted on trucks, troops will not detruck until given specific orders by the convoy commander.

(2) Troops will be prohibited from in any way conveying any information, whatsoever, to civilian or military personnel along the route.

(3) Civilian post boxes and telephones will not be used.

(4) Blackout discipline will be enforced.

5. POSTPONEMENT OR BREAK-DOWN.

a. In the event of postponement of D-day or enplaning, troops may be returned to marshalling areas as directed. Security measures in such event will be the same as outlined above.

b. In the event of damage to aircraft, necessitating a return to landing fields, briefed personnel will be segregated until H-hour.

6. RELEASE OF INFORMATION. No public mention of past, pending or present operations will be made under any circumstances prior to the official release of such information.

JONES
Major General

Inclosure: 1—Corps Pass Plan (omitted)

Distribution: (Same as for operation order)

Official:

/s/ Smith
G2

APPENDIX XIX

SIGNAL ANNEX—AIRBORNE DIVISION

CLASSIFICATION

102d Abn Div
SALISBURY, ENGLAND
101300 May 19_____

Annex 15 (Sig) to OpnO 12

Maps: EUROPE, 1:250,000, CHERBOURG; FRANCE, 1:50,000, 6E/6, 6E/5, 5F/5, 5F/2.

1. *a.* Annex 2, Intel.

   The en has facilities for rad interception and D/F which may be employed by him to take advantage of all violations of rad security. He can be expected to jam our rad transmissions and transmit false msg.

   b. OpnO 12 and Annex 7, Opn Overlay.

2. Rad and msgr comm will be established between all ech immediately after landing. Initially, rad will be the primary means of comm. Other means will be established as rapidly as possible.

3. *a.* Div sig co will install, operate, and maintain div sig system as follows:

   (1) (a) Div comm cen will be established immediately after landing.

   (b) Scheduled msgrs on H + 2.

   (c) Special M–209 converter settings issued by VIII Corps (abn) will be employed to rear base and laterally to adjoining div.

   (2) Wire Comm, App 1, Circuit Diagram.

   (3) Rad, App 2, Div Rad Nets.

   b. Div arty.

   (1) Msg cen open on landing.

   (2) Rad will be normal except for the following: Div arty will operate on AN/GRC–9 in div comd net and one AN/PRC–10 in div command's net.

(3) (a) Wire comm to be normal with provisions made to extend the axis of comm when necessary.

(b) Lowest numbered circuit to div arty to be simplexed for teletype.

(c) Submit to div sig off consolidated line route map and circuit diagram immediately after completion of system.

c. 304th Abn Inf:

(1) Msg cen, open on landing.

(2) Rad, enter div comd's net immediately on landing.

(3) Wire comm, normal.

d. 305th Abn Inf:

(1) Msg cen, open on landing.

(2) Rad, enter div comd's net immediately on landing.

(3) Wire comm, normal.

e. 306th Abn Inf:

(1) Msg cen, open on landing.

(2) Rad, enter div comd's net immediately on landing.

(3) Wire comm, normal.

x. (1) Operational msg may be in clear until otherwise directed. No mention of numerical designation, size, or unit will be made. Unit loc will be given in clear only in extreme emergency.

(2) (a) Existing wire installations: Interruption of existing tp circuits and neutralization of tp exchanges, cable heads, etc., will be carried out by wire comm pers only. Adv units will cut wire lines leading to en territory. Destruction of wire facilities only on order of div sig off.

(b) Wire comm will be utilized as soon as practicable by all elm.

(3) (a) Visual: Standard panels will be used.

(b) Yellow smoke, yellow flares, or panels will be used to indicate positions of friendly trp.

(c) Request from friendly acft for marking of friendly trp will be a green star cluster fired by acft.

(d) Flourescent panels will be used to identify friendly veh in accordance with SOI.

(4) Rad silence will be observed until H-hr.

4. *a.* AdminO 1.
   b. Sig sup dp loc at div sig co biv in vic div CP.
   c. Priorities will be given to all msgr and wire teams on roads and brg.
   d. Rad equipped with fresh btry. Units to include spare btry in loading plan.
5. *a.* Current index to SOI in effect.
   b. Not more than 3 days' call signs extracts and other code keys will be carried in the initial assault.
   c. Compromise of any code or cipher must be rept immediately to div sig off.
   d. Div sig off in div CP.

LEWIS
MAJ GEN

App: 1—Wire circuit Diagram (omitted)
2—Div Rad Net (omitted)
Distr: With OpnO 12
OFL:
/s/ Kirk
G–3

APPENDIX XX

TYPICAL RADIO NETS, AIRBORNE DIVISION—ASSAULT PHASE

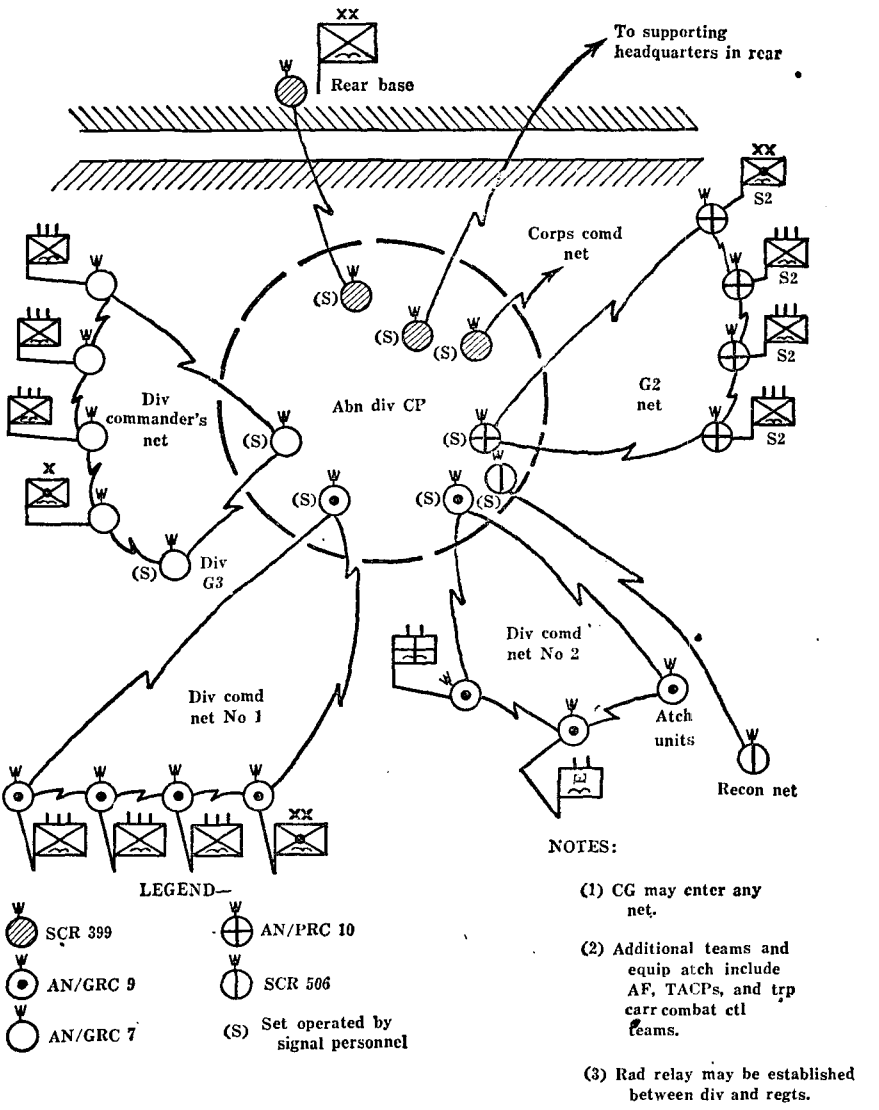


Figure 13. Typical radio nets, airborne division—assault phase.

APPENDIX XXI
CARGO AIRCRAFT

Section I. DISCUSSION

1. GENERAL

a. This appendix presents those characteristics and capabilities of cargo aircraft required by division, corps, and higher staff planners in planning airborne operations.

b. The aircraft data are an estimate of the actual performance data which may be expected in time of war.

c. The term "limited standard" as used herein is defined as an aircraft that is presently used by the military but is no longer being procured.

d. For staff planners of units below the division whose primary concerns are those of execution, a more technical presentation of certain characteristics of cargo aircraft, together with the technique of loading and lashing equipment, is found in TM 71–210 *Air Transport of Troops and Equipment* and USAF Technical Orders.

2. VARIATIONS IN THE ALLOWABLE CARGO LOAD

The allowable cargo load of an aircraft varies according to distance and certain other conditions. The greater the distance, the greater the weight of fuel and resultant reduced allowable cargo load. In radius operations the allowable cargo load for the distance traveled for parachute operations is generally greater than that for air-landed operations. This is because in air-landed operations there is a necessary safety restriction on the total weight of the aircraft on landing. In this appendix, the allowable cargo load for an aircraft can be determined for any range or radius by reference to graphs provided for that purpose. In actual airborne operations the Air Force commander announces the allowable load for each type of aircraft.

3. TYPICAL SAFE EQUIPMENT LOADS

These are single or combination equipment loads within the weight limits of the allowable cargo load that can be expeditiously and safely loaded into a cargo aircraft without modification or disassembly, and which can be balanced and secured for safe flight. Vehicle and trailer loads are computed on empty weights for simplicity. This permits simple computation of remaining weight capacities.

4. WEIGHT FACTORS

The following factors are used in all computations in this appendix:

a. A fully-equipped parachutist weighs 260 pounds.

b. A fully-equipped passenger weighs 240 pounds.

c. Representative types of aerial delivery containers:

A–5 Container. Net capacity—224-lb., gross weight—300-lb.

A–7, Modified Container. Net capacity—470-lb. gross weight—500-lb.

A–21 Container. Net capacity—433-lb., gross weight—500-lb.

A–22 Container. Net capacity—2,015-lb., gross weight—2,200-lb.

d. The 6,000-lb. load bearing platform has a net capacity of 6,000-lb.; a gross weight of 7,850-lb.

Section II. C–54 SKYMASTER

1. DESCRIPTION

The C–54 Skymaster is a low-wing, all metal, four-engine medium transport. (Limited Standard.)

2. TROOP TRANSPORT PROVISIONS

a. Number of Troop Seats. 49.

b. Troop Entrance. Through door at left rear of fuselage by means of removable step or organic ladder.

c. Baggage. In cargo compartment with troops or in compartment below flight deck.

3. LITTER TRANSPORT PROVISIONS

Number of Litter Positions. 36.

4. CARGO TRANSPORT PROVISIONS

a. Cargo Compartment Dimensions.

(1) *Length.* 597 inches.

(2) *Width.* 108 inches.

(3) *Height.* 93 inches.

b. Height of Cargo Entrance Above Ground. 100 inches.

c. Cargo Doors.

(1) *Location.* Left rear side of fuselage.

(2) *Dimensions.* 95 inches wide x 67 inches high.

*d. Cargo Loading Aids.**

(1) *Vehicles.* Portable ramps.

(2) *Cargo (bulk).* Cargo hoist at door—capacity 2,000 pounds.

Figure 14. C-54 Skymaster.

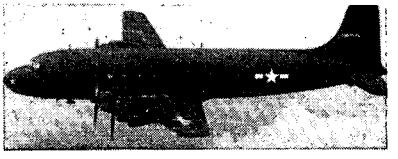


Figure 16. C-54 in flight.

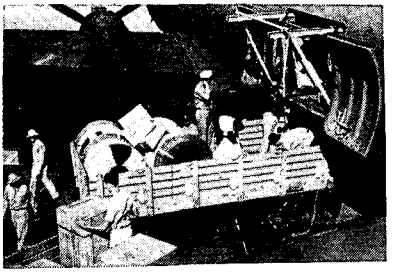


Figure 15. Loading cargo into C-54 using self-contained hoist.

Figure 17. Floor of C-54 cargo doors 9 feet above ground.

5. PARACHUTIST PROVISIONS

This airplane is not equipped for parachute operations, but it can be adapted with minor modification to jump a single stick out of the left rear door.

* These aids not generally available on aircraft now in service.

6. AERIAL DELIVERY PROVISIONS

There are no special provisions for the aerial delivery of supplies or equipment from this airplane.

7. AERIAL TOWING PROVISIONS

Some models of this airplane have a towing attachment rated at 16,700 pounds which is not adequate to tow the C–123 Medium Assault Transport, but could be utilized to tow liaison type airplanes or light cargo helicopters.

8. TYPICAL SAFE EQUIPMENT LOADS

a. 1 truck, ¼-ton, 4x4, M38.
1 howitzer, 105-mm, M2A1 on carriage M2A2.

b. 1 truck, ¼-ton, 4x4, M38.
1 gun, 76-mm, AT, T–124 on carriage T66.

c. 1 truck, ¼-ton, 4x4, M38.
1 gun, 40-mm, M1 on carriage, M2A1.

d. 4 trucks, ¼-ton, 4x4, M38.
2 trailers, ¼-ton, 2-wheel, cargo.

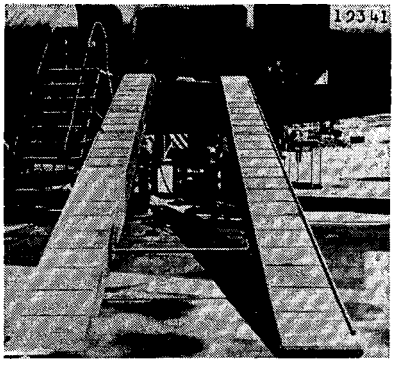


Figure 18. C-54 loading ramps in position. Ramps are carried in airplane when necessary.

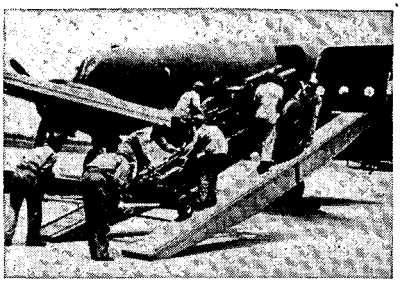


Figure 19. Loading 105-mm howitzer into C–54. Dolly used to support trail spades.

Section III. C–82, PACKET

1. DESCRIPTION

The C–82, Packet is a high-wing, twin-boom, all metal, medium transport (Limited Standard).

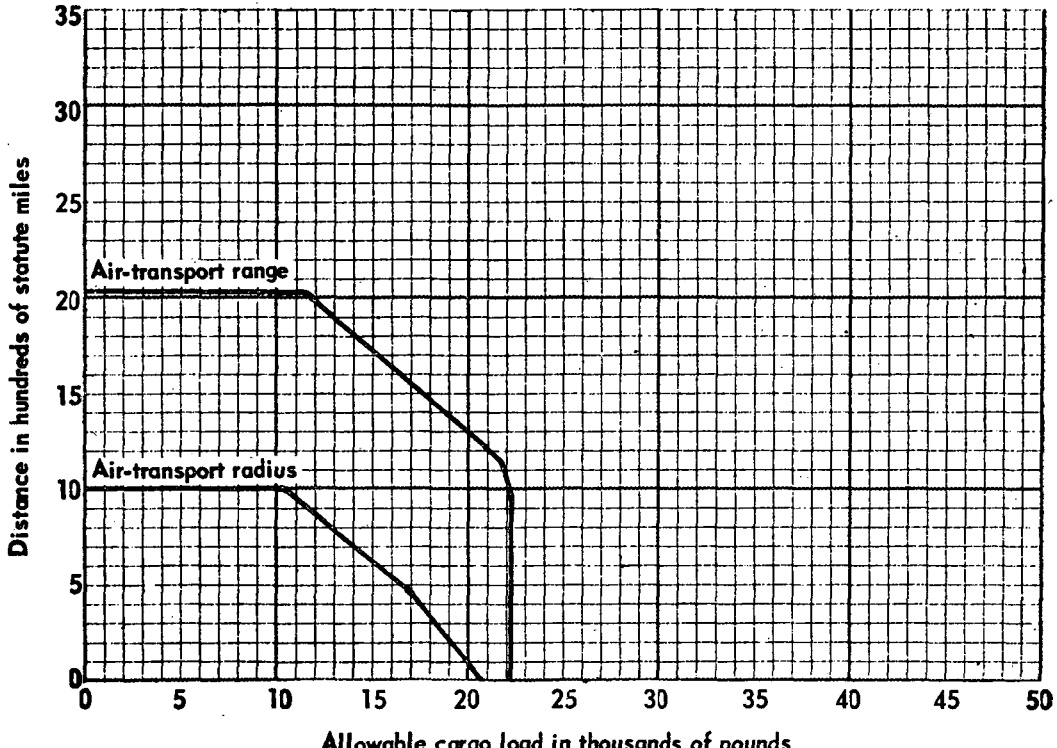


Figure 20. Cargo load vs. distance graph—C–54.

2. TROOP TRANSPORT PROVISIONS

a. Number of Troop Seats. 41.

b. Troop Entrance. Through door at left front of fuselage by means of organic ladder.

c. Baggage. In cargo compartment with troops.

3. LITTER TRANSPORT PROVISIONS

a. Number of Litter Positions. 34.

b. Attendants. 4.

4. CARGO TRANSPORT PROVISIONS

a. Cargo Compartment Dimensions (fig. 24).

b. Height of Cargo Entrance Above Ground. 48 inches.

c. Ground Clearance Under Horizontal Stabilizers. 168 inches.

d. Cargo Door.

(1) *Location.* Rear of fuselage.

(2) *Dimensions* (fig. 24).

e. Cargo Loading Aids.

(1) *Vehicles.* Portable ramps and snatch block fittings.

(2) *Bulk cargo.* Truck bed height of cargo floor and snatch block fitting for heavy loads.

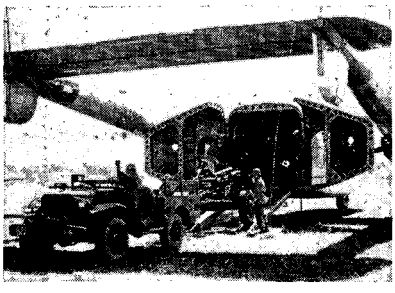


Figure 21. Loading 105-mm howitzer and ¾-ton truck into C–82.

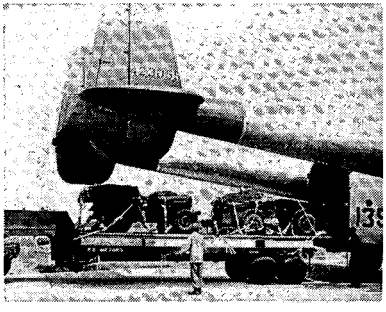


Figure 22. A ¼-ton truck and two ¼-ton trailers being loaded in C–82 for heavy equipment drop.

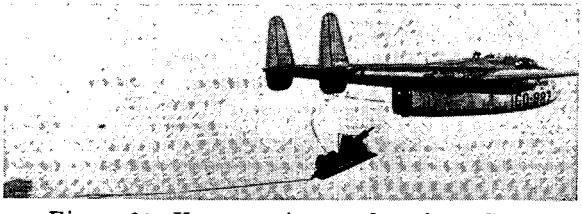


Figure 23. Heavy equipment drop from C–82 of 105-mm howitzer and ¼-ton truck.

5. PARACHUTIST PROVISIONS

a. Maximum Capacity. 41.

b. Exit Doors. At rear of fuselage on each side of the compartment.

c. Accompanying Supplies. Can be dropped from the interior aerial delivery system (par. 6).

6. AERIAL DELIVERY PROVISIONS

a. Pararacks. Early model aircraft are equipped with interior vertical "pararacks" which drop containers through the paratainer well. Capacity of pararacks—ten 500-pound containers.

b. Monorail. Late model aircraft are equipped with an interior overhead monorail system for discharging supplies through the paratainer well. Capacity of the monorail—fifteen 300-pound containers.

c. Floor Level Conveyors. All models of this aircraft can be fitted for ejecting supplies or equipment from the rear of the fuselage. The clamshell cargo doors are removed and the supplies or equipment are placed on top of wheel conveyors positioned on the floor of the cargo compartment. Capacity of the conveyor system is governed only by the allowable cargo load, and interior dimensions. (Example: Three 2,200-pound containers can be loaded and dropped on a 484-mile radius mission.)

7. AERIAL TOWING PROVISIONS

All models of this airplane have a towing attachment rated at 30,000 pounds which is not adequate to tow the C–123 Medium Assault Transport, but could be utilized to tow liaison type airplanes or cargo helicopters.

8. TYPICAL SAFE EQUIPMENT LOADS—AIR-LANDED

a. 1 truck, ¾-ton, 4x4 and 1 trailer, 1-ton, 2-wheel, cargo.

b. 1 truck, ¾-ton, 4x4 and 1 howitzer, 105-mm, M2A1, on carriage M2A2.

c. 1 truck, ¾-ton, 4x4 and 1 gun, 76-mm, AT, T–124, on carriage T–66.

d. 1 truck, ¾-ton, 4x4 and 1 gun, 40-mm, M1 on carriage, M2A2.

e. 1 truck, 2½-ton, 6x6, cargo.

f. 2 carriers, cargo, M29.

g. 3 trucks, ¼-ton; 3 trailers, ¼-ton.

9. DROP CAPABILITIES

The C–82 can drop the following heavy equipment* intact:

a. 2 trucks, ¼-ton.

b. 1 truck, ¼-ton, and 1 howitzer, 105-mm.

c. 1 truck, ¼-ton, and 1 trailer, ¼-ton.

d. 6,000 pounds of boxed supplies.

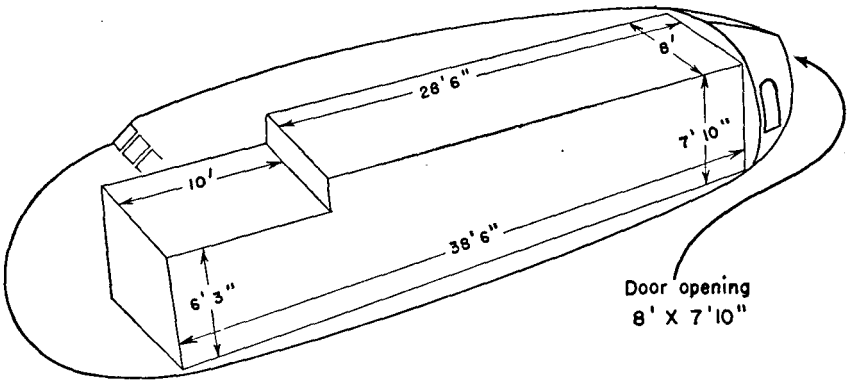


Figure 24. C–82 cargo compartment.

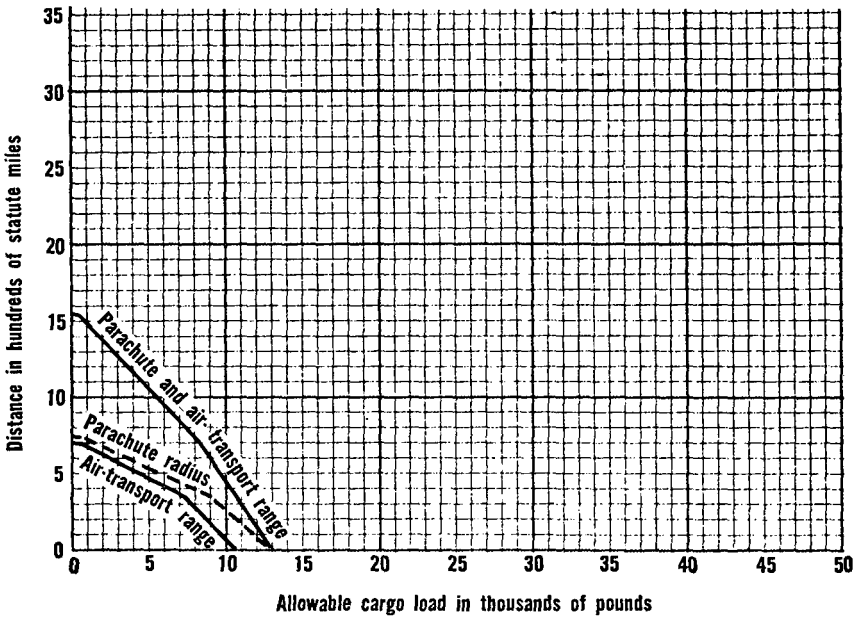


Figure 25. Cargo load vs. distance graph—C–82.

* A small crew jumps with the equipment.

Section IV. C–119, PACKET

1. DESCRIPTION

The C–119 Packet is a high-wing, twin-boom, twin-engine, all metal, medium transport.

2. TROOP TRANSPORT PROVISIONS

a. Number of Seats. 42 (20 additional seats can be installed.)

b. Troop Entrance. Through door at left front of fuselage by means of organic ladder.

c. Baggage. In cargo compartment with troops.

d. Number of Air-Transported Troops. 62.

3. LITTER TRANSPORT PROVISIONS

a. Number of Litter Positions. 35.

b. Attendants. 4.

4. CARGO TRANSPORT PROVISIONS

a. Cargo Compartment Dimensions (fig. 28).

b. Height of Cargo Entrance and Floor Above Ground. 48 inches.

c. Ground Clearance Under Horizontal Stabilizers. 164 inches.

d. Cargo Door.

(1) *Location.* Rear of fuselage.

(2) *Dimensions* (fig. 28).

e. Cargo Loading Aids.

(1) *Vehicles.* Portable ramps and snatch block fittings.

(2) *Bulk cargo.* Truck bed height of cargo floor and snatch block fitting for heavy loads.

5. PARACHUTIST PROVISIONS

a. Maximum Capacity. 42.

b. Exit Doors. At rear of fuselage on each side of the compartment, 36 inches wide—72 inches high.

c. Accompanying Supplies. Can be dropped from the interior aerial delivery system (par. 6).

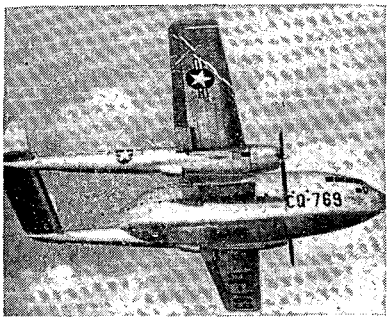


Figure 26. C–119 airplane.

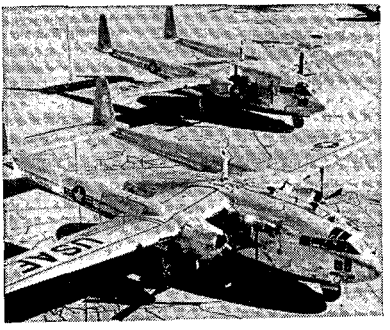


Figure 27. Front view of C–119 airplane.

6. AERIAL DELIVERY PROVISIONS

a. Monorail. Aircraft are equipped with an interior overhead monorail system for discharging supplies through the paratainer well. Capacity of the monorail—twenty 500-pound aerial delivery containers (10,000 lbs.).

b. Floor Level Conveyors. All models of this aircraft can be fitted for ejecting supplies or equipment from the rear of the fuselage. The clamshell cargo doors are removed and the supplies or equipment are placed on top of wheel conveyors positioned on the floor of the cargo compartment. Capacity of the conveyor system is governed only by the allowable cargo load and interior dimensions of the aircraft. With clamshell doors removed, seven 2,200-pound A–22 (Aerial resupply) equipment containers can be ejected from the cargo compartment out of the cargo door on a 806-mile radius mission.

7. AERIAL TOWING PROVISIONS

All models of this airplane have a towing attachment rated at 30,000 pounds which is not adequate to tow the C–123 Medium Assault Transport, but can be utilized to tow liaison type airplanes or light cargo helicopters.

8. TYPICAL SAFE EQUIPMENT LOADS (Air-landed)

a. 3 trucks, ¼-ton, 4x4, and 3 trailers, ¼-ton.

b. 2 weapons carrier, ¾-ton, 4x4.

c. 1 truck, cargo, 2½-ton, LWB, 6x6, with canvas cab. 1 truck, ¼-ton, 4x4, and 1 trailer, cargo, ¼-ton, 2-wheel.

d. 1 truck, cargo, 2½-ton, SWB, 6x6, with winch, canvas cab. 1 howitzer, 105-mm, M2A1, carriage M2A2.

e. 1 car, armored, utility, M20, 6x6.

f. 1 tractor, crawler-type, Diesel, 8,600–12,000 DBHP, D6, with dozer.

g. 1 truck, ¾-ton, 4x4, and 1 gun, 76-mm, AT, T–124 on carriage T–66.

Note. Combinations above can be carried only at distances for which the allowable cargo load is more than the stated total weight of the vehicles (fig. 32).

9. HEAVY DROP CAPABILITIES

The C–119 can drop the following heavy equipment intact:

a. 3 trucks, ¼-ton, and 7 personnel.

b. 2 trucks, ¾-ton, and 8 personnel.

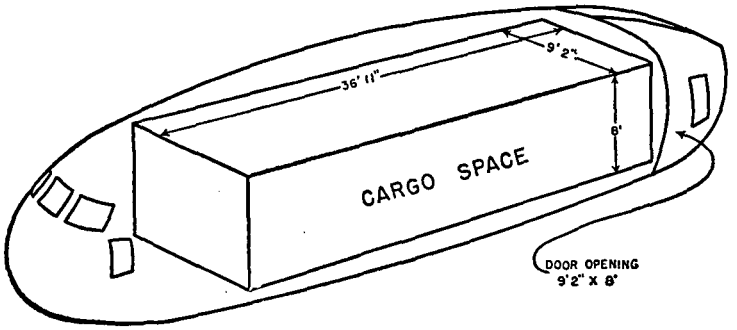


Figure 28. C–119 cargo compartment.

c. 1 truck, 2½-ton, 1 trailer, ¼-ton, and 7 personnel.

d. 1 truck, ¼-ton, 1 gun, AT, 76-mm, and 12 personnel.

e. 1 truck, ¼-ton, 1 howitzer, 105-mm, 2 containers, 2,200-pound, and 7 personnel.

f. 1 gun, 40-mm, 1 quad 50MG, 1 container, 2,200-pound, and 7 personnel.

g. 2 cargo carriers, M29C (Weasel).

h. 18,000 pounds of boxed supplies.

i. 7 containers, 2,200-pound, and 7 personnel.

j. 1 D–4 dozer and 2 personnel.

k. 1 155-mm howitzer and 7 personnel.

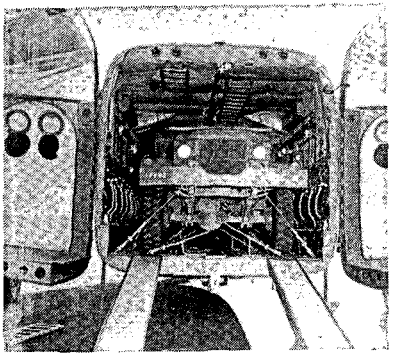


Figure 29. Cargo entrance of C–119. Clamshell doors are removable.

Figure 30. C–119 loaded with 42 paratroops and 20 monorail bundles.

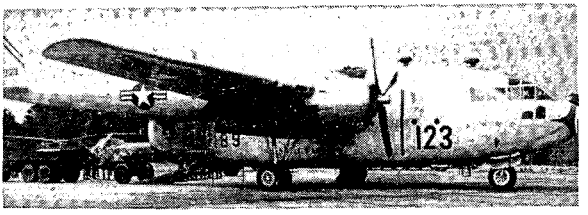


Figure 31. Side view of C–119.

Section V. C–123

1. DESCRIPTION

The C–123 medium assault airplane is a high-wing, twin-engine, full-cantilever monoplane of metal and steel tubing construction. It is capable of landing and taking off from unprepared fields.

2. TROOP TRANSPORT PROVISIONS

a. Number of Troop Seats. 60.

b. Troop Entrance. Personnel doors on each side in rear portion of the fuselage. *Dimensions.* 60⅝ inches high x 30$^{3}/_{16}$ inches wide. An additional door is located on the left side in the forward portion of the fuselage.

c. Baggage. In cargo compartment with troops.

d. Number of Air Transported Troops. 60.

3. LITTER TRANSPORT PROVISIONS

Number of Litter Positions. 50 (in place of seats).

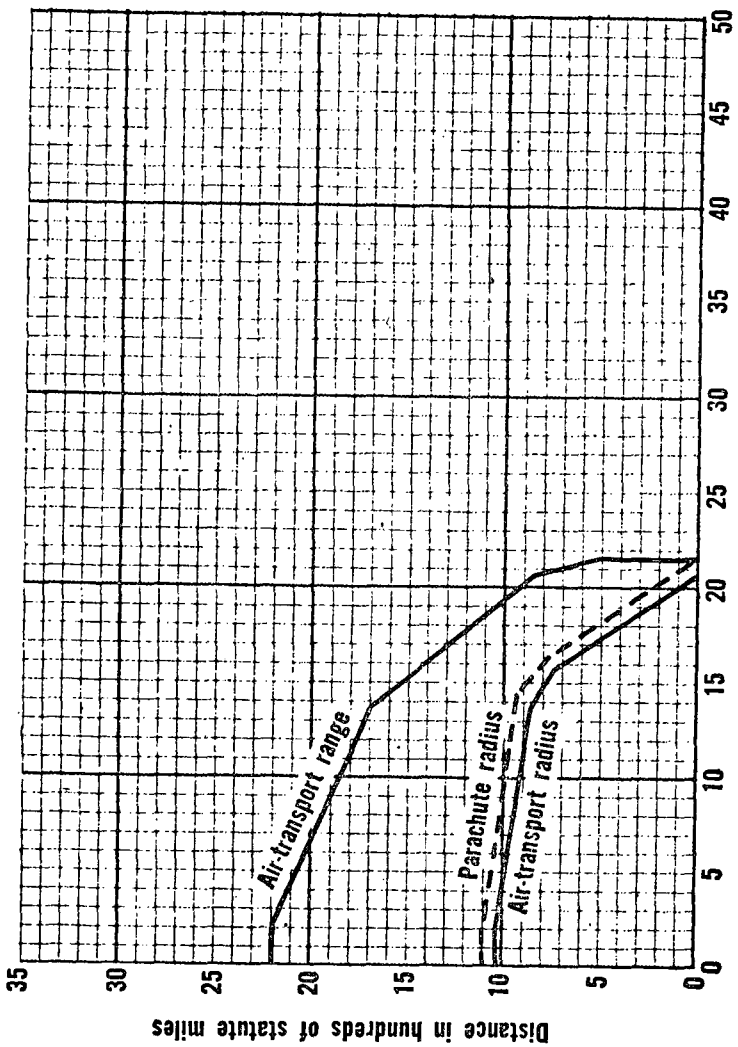


Figure 32. Cargo load vs. distance graph C–119.

4. CARGO TRANSPORT PROVISIONS

a. Means of Loading. Cargo door in rear of fuselage. Floor section lowers to become loading ramp. Aircraft is equipped with provisions for securing a vehicle winch to assist in loading heavy items.

b. Cargo Compartment Dimensions (fig. 34).

c. Ground Clearance Under Tail. 101 inches.

d. Distance Between Wheel Wells in Cargo Compartment. 110 inches.

5. PARACHUTE PROVISIONS

This aircraft is not presently equipped with personnel parachute provisions but tests are to be conducted to determine its parachute capability.

6. AERIAL DELIVERY PROVISIONS

The C–123 will be tested in the near future for dropping heavy equipment by the use of floor conveyors.

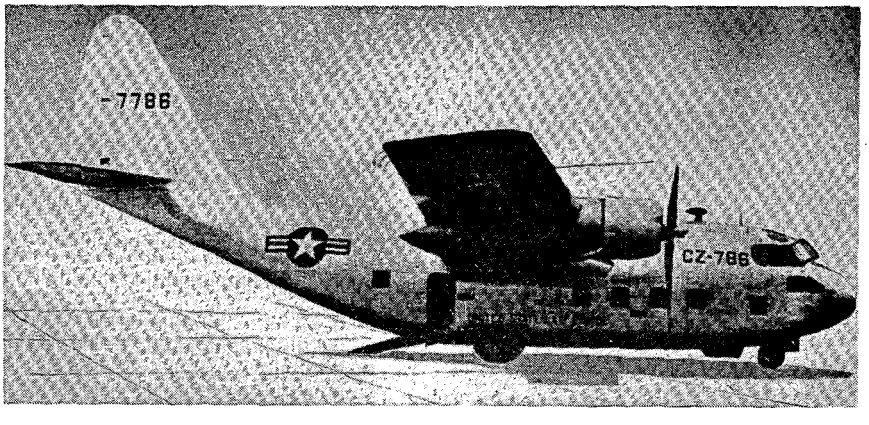


Figure 33. C–123.

7. AERIAL TOWING PROVISIONS

This aircraft has a towing attachment and can tow light planes and light helicopters.

8. TYPICAL EQUIPMENT LOADS

a. 3 trucks, ¼-ton, 4x4, and 3 trailers, ¼-ton.

b. 2 trucks, weapons carrier, ¾-ton, 4x4.

c. 1 howitzer, 155-mm, M1.

d. 1 compressor, air, truck-mounted gasoline engine.

e. 1 carrier, half-track. 1 81-mm mortar, M21.

f. 1 truck, cargo, 2½-ton, 6x6, SWB, with canvas cab, and 1 howitzer, 105-mm, M2A1, on carriage, M2A2.

g. 1 tractor, crawler type, Diesel, 8,600–12,000 DBHP, D–6, with dozer.

Note. Combinations above can be carried only at distances for which the allowable cargo load is more than the stated total weight of the vehicles (fig. 35).

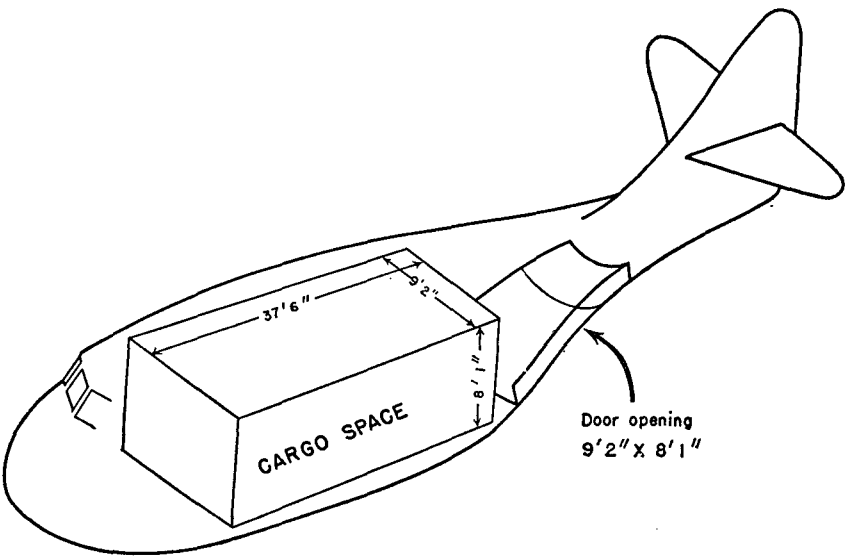


Figure 34. C–123 cargo compartment.

Section VI. C–124

1. DESCRIPTION

The C–124 is a low-wing, all-metal, four-engine, heavy-transport monoplane.

2. TROOP TRANSPORT PROVISIONS

a. Number of Troop Seats. 200 (located on two decks).

b. Baggage. In cargo compartment with troops or in compartments below flight deck.

c. Troop Steps or Ramp for Personnel.

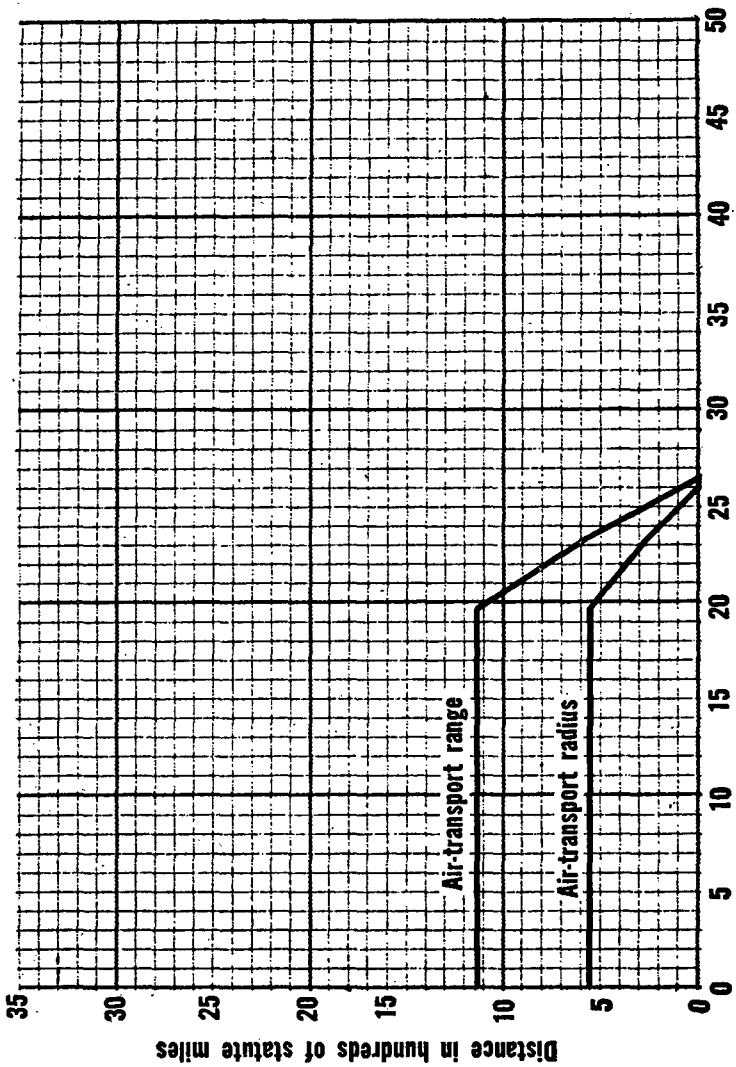


Figure 35. Cargo load vs. distance graph C–123.

3. LITTER PROVISIONS

Number of litter positions. 132 (in place of seats).

4. PARACHUTIST PROVISIONS

Initial models are not equipped for parachute operations, but later models will contain provisions for parachuting personnel, supplies, and to a degree, heavy equipment.

5. CARGO TRANSPORT PROVISIONS

a. Over-all Dimensions. (Fig. 42.)

b. Cargo Compartment Equipped with Two Decks.

c. Cargo Door. Clamshell doors open lower half of nose of airplane.

d. Cargo and Equipment. Can be loaded either through the nose door by use of a ramp or by elevator in the aft end of the cargo compartment.

e. Dimensions of Cargo Door in Nose. 140 inches high x 136 inches wide.

f. Cargo Elevator Dimensions. 160 inches long x 92 inches wide, capacity—16,000 pounds. Ground clearance of aircraft at elevator well—105 inches.

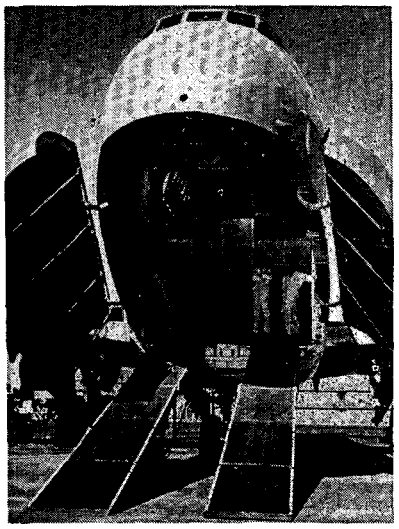


Figure 36. C–124 loading.

Figure 37. C–124.

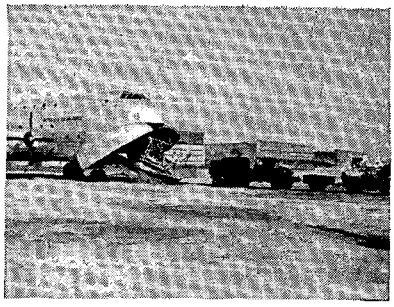


Figure 38. Unloading ¼-ton truck, trailer, motorized air compressor and tractor, crawler-type, Diesel, with angledozer.

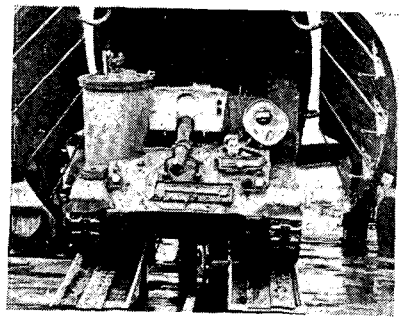


Figure 39. Unloading 105-mm howitzer M–37 from C–124.

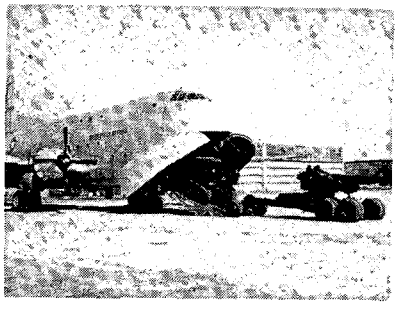


Figure 40. Loading 155-mm gun and prime mover.

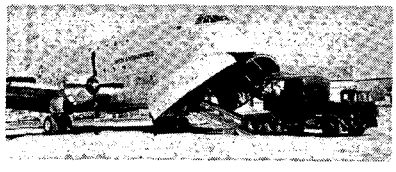


Figure 41. Loading truck-mounted crane.

6. AERIAL TOWING PROVISIONS

Early models are not equipped with aerial towing provisions, but later models are to be so equipped with a provision of sufficient capacity to tow the C–123 Medium Assault Transport.

7. TYPICAL EQUIPMENT LOADS

a. 8 trucks, ¼-ton, 4x4, and 8 trailers, ¼-ton, 2-wheel.

b. 1 tank, light, M–41.

c. 1 howitzer, 155-mm, M1, on carriage, M1A2.

d. 1 tractor, high-speed, 13-ton, M5A3.

e. 1 truck, 2½-ton, 6x6, cargo, SWB, with winch.

f. 1 truck, 2½-ton, 6x6, cargo, LWB.

g. 1 howitzer, 105-mm, M2A1, on carriage, M2A2; and 1 trailer, ammunition M10.

h. 1 carriage, motor, twin 40-mm gun, M19.

i. 1 truck, ¼-ton, 4x4; 1 trailer, 1-ton, 2-wheel ammunition; 1 trailer, ¼-ton, 2-wheel, cargo.

j. 1 vehicle, utility, armored M44.

k. 2 graders, road, motorized-Diesel, engine-driven, 12-foot mold board.

l. 1 gun, 90-mm, AA, M2, on mount AA, M2, with equipment and supply, 1 truck, 2½-ton, 6x6, cargo.

Note. Combinations above can be carried only at distances for which the allowable cargo load is more than the stated total weight of the vehicles. (Fig. 43).

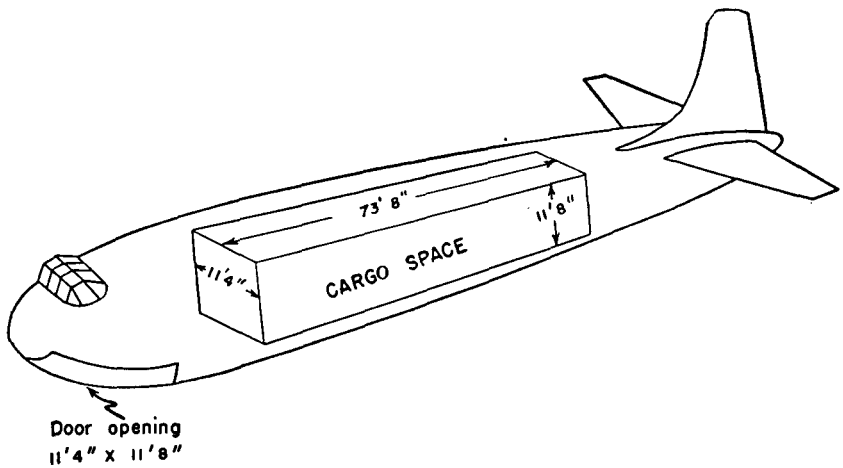


Figure 42. C–124 cargo compartment: length, 73'8"; clear length, 49'2" illustrated.

Section VII. C–97, STRATOFREIGHTER

1. DESCRIPTION

The C–97 is a low-wing, all-metal, four-engine heavy transport airplane.

2. TROOP TRANSPORT PROVISIONS

a. Number of Troop Seats. 134.

b. Troop Entrance. One door on each side of main compartment, one door on left side of lower front compartment.

c. Means of Loading. Troop steps or ramp for personnel, ramp for vehicles.

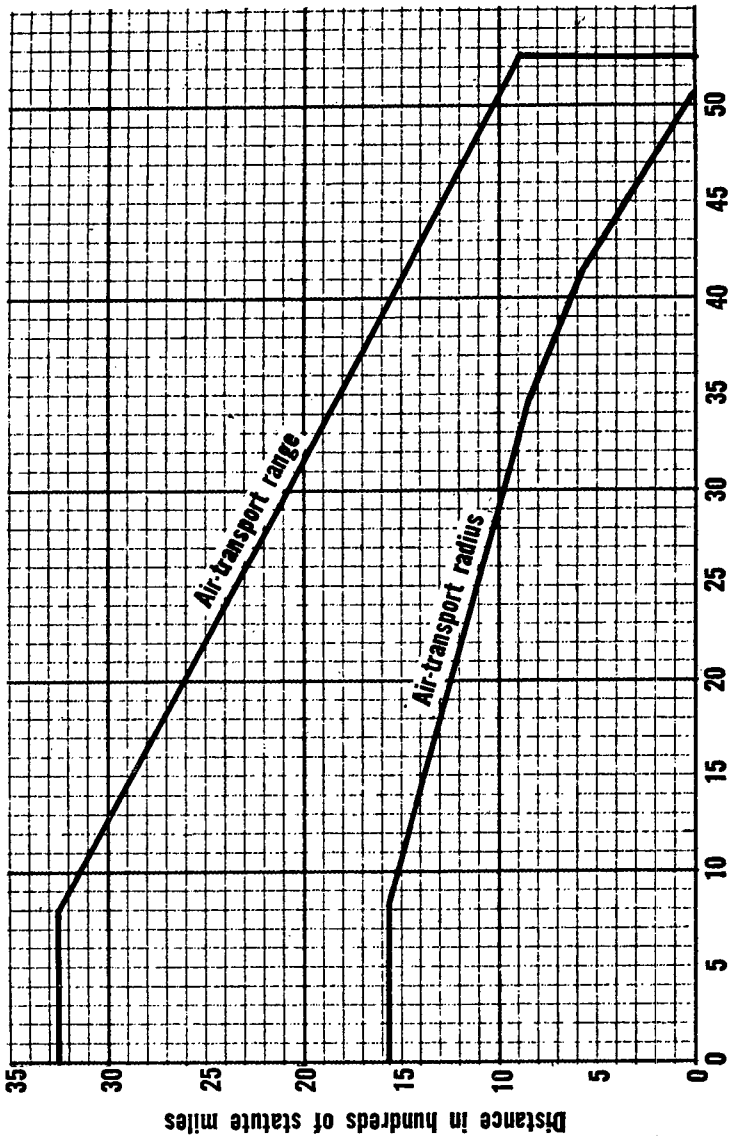


Figure 43. Cargo load vs. distance graph—C–124.

3. LITTER TRANSPORT PROVISIONS

Number of litter positions. 83 (in place of seats).

4. CARGO TRANSPORT PROVISIONS

a. Cargo Compartment Provisions:

(1) *Main cargo compartment.* 764 inches long, 105½ inches wide (maximum), 87 inches (minimum) ; 96 inches high (maximum) ; 87 inches high (minimum).

(2) *Lower cargo compartments, two each.* 264 inches long, 74 inches wide and 60 inches high.

b. Height of Cargo Compartment Above Ground. 164 inches.

c. Cargo Door. On rear underside of fuselage on level of main compartment. Size opening—88 inches to 110 inches wide x 96 inches to 120 inches high.

5. PARACHUTIST PROVISIONS

This aircraft is not equipped for personnel parachute operations.

6. AERIAL DELIVERY PROVISIONS

a. Overhead monorail conveyors are provided which drop containers through flight operable rear cargo doors. The capacity of the overhead monorail is eighty-five 300-pound or fifteen 1,500-pound containers (using A–22 containers).

b. Floor level conveyors from cargo doors are provided for gravity ejection during flight.

c. The capacity for dropping packaged supplies from floor level conveyor is limited only by allowable cargo load.

d. Heavy dropping of equipment from the C–97 has not yet been tested.

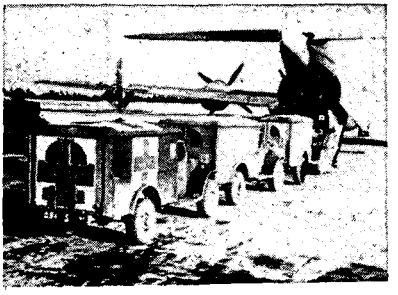


Figure 44. Four ¾-ton ambulances being loaded into C–97.

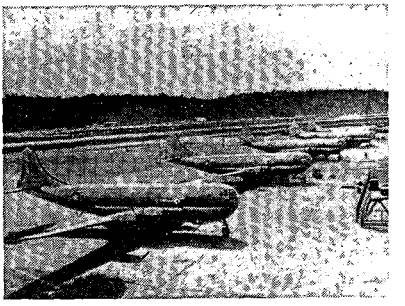


Figure 45. C–97s on the line.

7. AERIAL TOWING PROVISIONS

The C–97 is not presently equipped with a towing attachment.

8. TYPICAL EQUIPMENT LOADS

a. 6 trucks, ¼-ton, 4x4.

b. 4 trucks, weapons carriers, ¾-ton, 4x4.

c. 2 trucks, weapons carriers, ¾-ton, 4x4. 2 guns, 40-mm M1, on carriage M2A1.

d. 3 trucks, cargo, SWB, 2½-ton, 6x6, with canvas cab.

Note. Combinations above can be carried only at distances for which the allowable cargo load is more than the stated total weight of the vehicles. (Fig. 48).

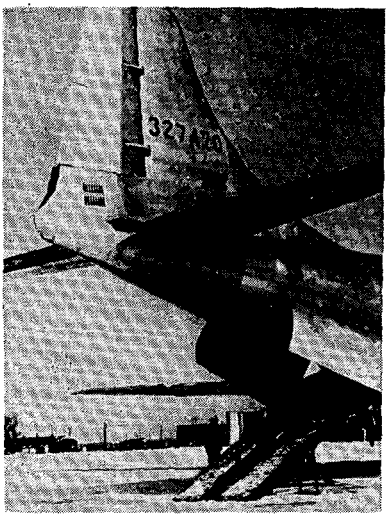


Figure 46. View of cargo doors and ramps.

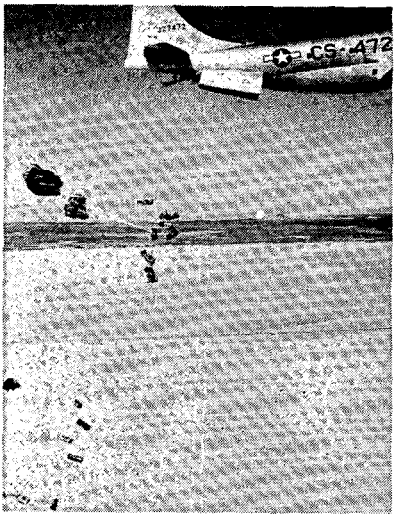


Figure 47. Monorail discharging 85 aerial delivery containers.

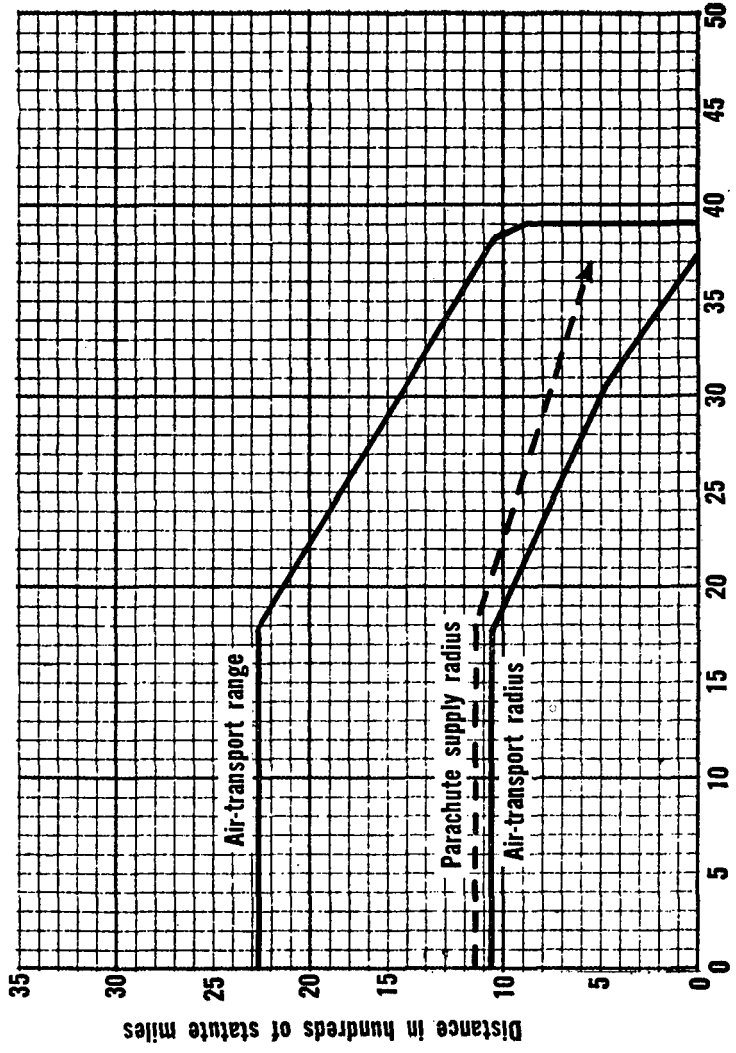


Figure 48. Cargo load vs. distance graph—C–97.

APPENDIX XXII

AERIAL DELIVERY OF SUPPLIES AND EQUIPMENT

1. GENERAL

This appendix presents information covering capabilities and techniques for the delivery of supplies and equipment by air. It amplifies material found in appendix XXI.

2. AIRCRAFT

a. The C–47, C–46, and C–54 aircraft can deliver supplies, equipment, vehicles, and weapons by air; however, their capability of delivering these items either by ejection in flight or airlanding is extremely limited because of the conformation of the aircraft and size of exits.

b. The C–123, although designed for carrying large items, has not been fully tested in the field of aerial delivery techniques. It can be assumed that in the near future it will have the same general capabilities for delivery of large items in flight as the C–119.

c. The C–97 and C–124 are capable of aerial delivery of large quantities of supplies and can air-land large items of equipment, vehicles, and weapons.

d. The C–119 is presently the aircraft which is most suited for aerial delivery of supplies, equipment, and weapons since it is practical to deliver by parachute the entire payload using a gravity roller conveyor system and ejecting large bulky containers through the loading aperture of the airplane with clamshell doors removed. (App. XXI gives a detailed description and capabilities of aircraft.)

3. AERIAL DELIVERY CONTAINERS AND PLATFORMS

a. Background. The original Standard A series containers were designed for use during world war II. Each was constructed for a special purpose and designed to carry a maximum load of approximately 300 pounds. They were ejected through the side doors or bomb bays of aircraft or from pararacks suspended under the wings. With the advent of the C–119 aircraft which is capable of ejecting twenty 500-pound bundles using the monorail system or a series of heavier and more bulky containers by removing the

clam shell doors, there existed a need for a family of aerial delivery containers designed to exploit the new increased capabilities. Therefore, new delivery containers, platforms, and kits were designed to replace the aerial delivery containers A–4, A–5, A–6, A–7, and A–10.

b. Description. The present standard type aerial delivery containers, platforms, and kits are as follows:

Type	*New capacity pounds*	*Gross weight*	*Description*
A–7, (modified)	470	500	A strap-type container composed of two or more 188-inch straps capable of being adjusted to various type loads. It is designed to deliver loads such as ammunition, water cans, rations, and drums. Normally dropped from monorail or doors of aircraft. (Fig. 49).
A–21	433	500	An adjustable container composed of web sling, scuff pad, cotton duck liner, and quick opening device. It is adjustable in length from 30 inches to 60 inches, in width from 20 inches to 40 inches, and in height from 10 inches to 30 inches. Normally dropped from monorail or side doors of aircraft. (Fig. 50).
A–22	2,015	2,200	A flexible container, rectangular in shape and adjustable vertically and horizontally. Each corner and the top is capable of being opened rapidly for removal of contents. It measures 43 inches x 52 inches horizontally, and 60 inches vertically, and is reducible to 30 inches x 38 inches horizontally and 24 inches vertically. Seven containers can be carried and ejected from the rear cargo door of a C–119 airplane in 4 seconds with a dispersion pattern of 100 yards in diameter. (Figs. 51 and 52).
Load bearing platform.	6,000	7,850	Designed to permit attachment of parachute risers to a suspension system which in turn is attached directly to the platform. It is 80 inches wide and 144 inches long. Functions primarily as a decelerating device designed to absorb the maximum amount of opening and landing shock. The platform is used for parachute delivery of miscellaneous equipment in-

Type	New capacity pounds	Gross weight	Description
			cluding 2-wheel trailers, generators, litters, medical equipment, bridging equipment, welding sets, water-purification equipment and supplies. Three platforms can be carried and ejected from a C–119 aircraft. (Figs. 53 and 54).
Heavy drop kit	3,000 to 18,000.	3,200 to 20,000.	Kits are designed for the parachute delivery of vehicles, towed weapons and trailers. The kit consists of a platform which rides on a wheel-type conveyor system and upon which the vehicle or weapon or both are placed; tie-down accessories for securing the load in the airplane; drag parachute to extract the load, and main canopies to lower the equipment. The kit platform differs from the load-bearing platform in that the point of suspension for the load is on the item carried rather than the platform and it is not designed to absorb the degree of parachute opening shock which is absorbed by the load bearing platform. Kits are of variable sizes depending on the size of the item to be dropped. Items which have been dropped using heavy kits are 2½-ton truck, 155-mm howitzer, D–4 bulldozer, and all smaller weapons and vehicles organic to the airborne division. (Figs. 55, 56, and 57).

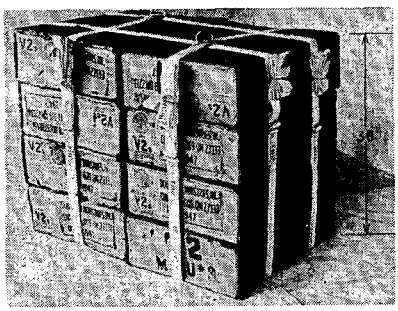


Figure 49. A–7 container using four straps.

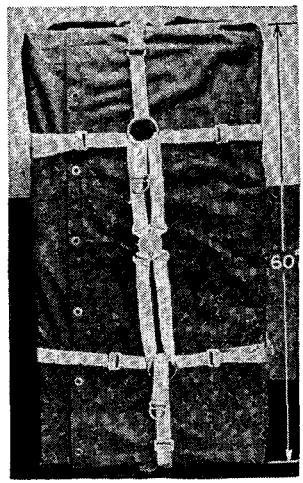


Figure 50. A–21 aerial delivery container, assault, 500-pound.

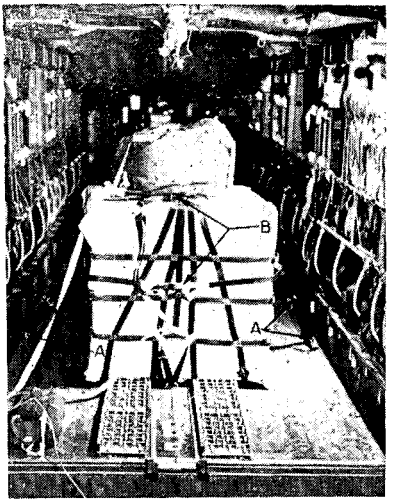


Figure 51. A–22 loaded in C–119.

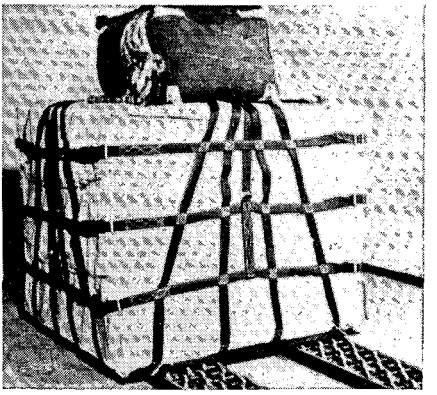


Figure 52. A–22 aerial delivery container, 2200-pounds.

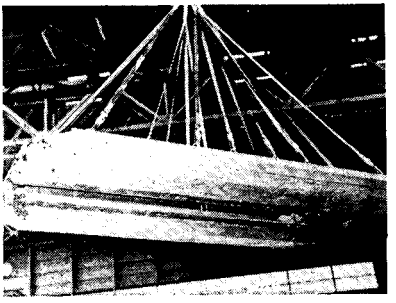


Figure 53. Load-bearing platform suspended on risers.

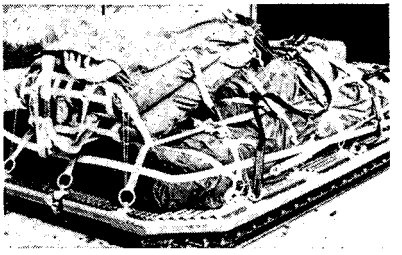


Figure 54. Load-bearing platform loaded for delivery.

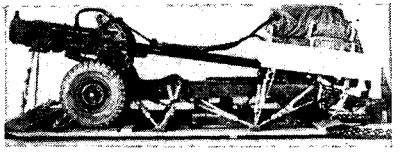


Figure 55. Gun, 76-mm, T–124, on carriage, gun, T66, prepared for parachute drop.

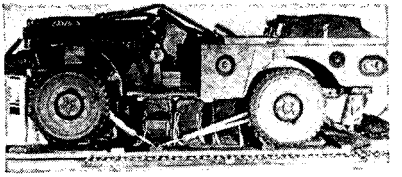


Figure 56. A typical heavy drop load truck ¾-ton, 4x4, weapons carrier, w/wn, rigged on heavy drop platform, prepared for parachute drop.

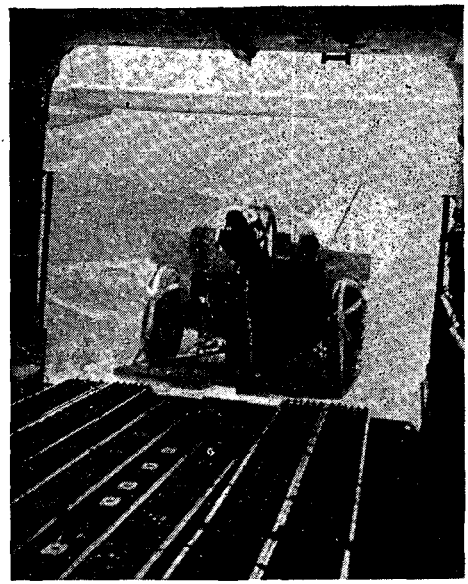


Figure 57. 105-mm howitzer dropping from rear aperture of C–119.

Figure 58. Loaded monorail.

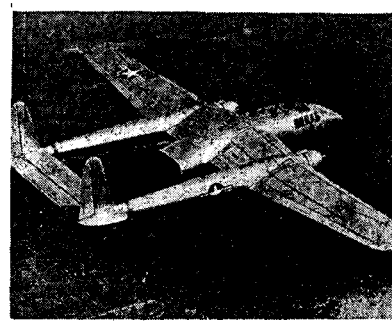


Figure 59. In flight with clamshell doors removed.

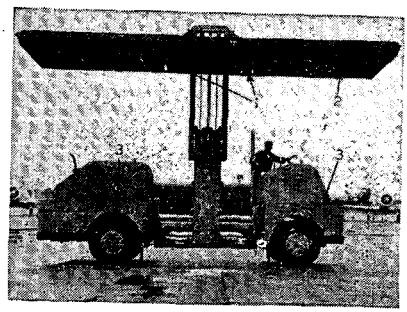


Figure 60. Cargo-handling equipment, side view.

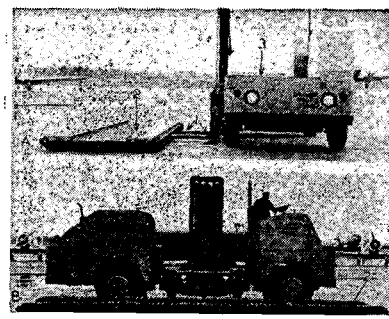


Figure 61. Cargo-handling equipment, front and side view.

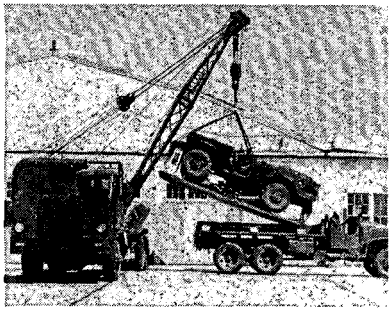


Figure 62. ¾-ton truck on platform lifted onto 2½-ton truck by crane.

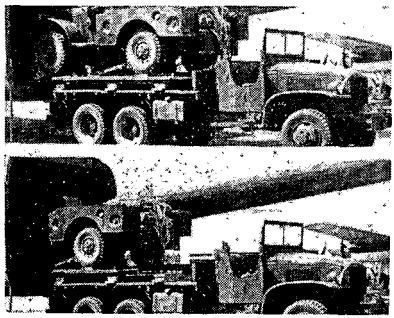


Figure 63. Loading ¾-ton truck from 2½-ton truck into airplane.

APPENDIX XXIII

EXPLANATION OF TERMS

Accompanying Supplies. Those supplies of all classes carried by units into the airhead.

Aerial Delivery. Air movement of supplies and equipment where unloading is accomplished with or without parachute from aircraft in flight.

Aerial Resupply. The act or process by which aerial delivery of supplies is made to ground units. It is normally employed where the usual ground lines of communications or aircraft landing fields are not available or are inadequate or uneconomical.

Air Evacuation. Withdrawal of personnel or matériel or both by air.

Airborne Force. Force composed primarily of land and air units organized, equipped, and trained for airborne operations.

Airborne Operation. An operation involving the movement of armed forces by air into an objective area for ground combat.

Airborne Units. Units organized, equipped, and trained primarily for making assault landings from the air.

Airhead. Designated area in hostile or threatened territory which, when seized and held, ensures the continuous air-landing of troops and matériel and provides maneuver space necessary for projected operations.

Air-Landed. Moved by air and disembarked, or unloaded, after the aircraft has landed.

Air-Movable. Capable of being transported by air and air-landed or aerial-delivered.

Air-Movement. Generic term covering all air transport of units, personnel, supplies, and equipment; includes aerial delivery and air-landed and covers both tactical and administrative movements.

Air-Movement Column. A series of serials following a lead formation over the same flight path.

Air-Transportable. Capable of being air-landed.

Allowable Cargo Load (Air). The amount of cargo, determined by weight, cubic displacement, and distance to be flown, which may be transported by aircraft.

Assault Echelon. In airborne operations, the airborne units which are used to seize an airhead.

Assault Supplies. Those supplies of all classes which accompany the assault elements of airborne units into the objective area.

Build-Up. The process of attaining prescribed strengths of units and levels of supply. Also may be applied to the means of accomplishing this process.

Cargo Tie-Down System. The system of fittings, devices, and provisions designed to prevent shifting of loads during air movement.

Combat Echelon. Part of an organization which engages in combat, as distinguished from that part whose primary duties are administrative.

Departure Point. A location on the ground used to mark the transition from overland to overwater flight procedure, or from the flight procedure used over friendly territory to that used for flying over enemy territory.

Drop Zone (DZ). A specified area upon which airborne troops, equipment, and supplies are dropped by parachute, or on which supplies and equipment may be delivered by free fall.

Echelonment. Subdivision of personnel and equipment into assault or combat follow-up, and rear components or groups.

Element. A portion of an airborne or air-landed unit described by its method of entry into the combat area, such as: parachute element, airplane element, seaborne element, or overland element.

Follow-Up Echelon. The portion of an airborne force, excluding the rear echelon, which is not initially brought into combat, but which joins the assault echelon as soon as possible after the airhead has been established, or after contact has been made between the assault echelon and the troops making the main ground effort. This echelon may contain air-landed, seaborne, or overland elements.

Follow-Up Supply. That initial resupply which is delivered directly to forces in the airhead by air. It is prepackaged on a unit basis for automatic or on call delivery.

Initial Point. A point close to the landing area where troop carrier air formations make final alterations in course to pass over individual drop or landing zones.

Landing Area. The general area used for landing troops and matériel either by parachute or aircraft. This area includes one or more drop zones, landing zones, or landing strips.

Landing Strip or Landing Field. A prepared area suitable for air-landing troops and matériel and for take-off of aircraft for return to base.

Landing Zone (LZ). A specific area for landing assault cargo aircraft.

Marshalling. The process by which units participating in an airborne operation move to temporary camps at departure airfields, or in the vicinity thereof; complete preparations for combat; and load into aircraft ready for take-off.

Marshalling Area. The general area in which the marshalling camps and departure airfields are located and from which the air movement is initiated.

Maintenance Supply. Those supplies required periodically to reconstitute stocks which have been depleted by issue or loss during a period.

Objective Area. The proposed area of airborne operations; it includes the airhead.

Pathfinders. Teams dropped at an objective to establish and operate signal devices for the purpose of guiding aircraft to drop and landing zones, or experienced airplane crews who lead a formation to the drop zone.

Pay Load. The sum of the weight of fuel and cargo that an aircraft can carry, expressed in pounds. As the distance to be flown increases, the fuel required increases, and the allowable cargo load decreases.

Radius of Action. The maximum distance to which an airplane can safely travel and return without refueling. Operations under radius conditions are those in which aircraft deliver troops or matériel at a destination and return without refueling.

Range. The maximum distance that an airplane can safely travel without refueling. Operations under range conditions are those in which the aircraft fly to a destination at which they must be refueled before further flight can be made.

Rear Echelon. The portion of an airborne force which is left at its rear base to perform administrative functions which cannot be accomplished effectively in the combat area.

Rendezvous Point. Point where fighter escort joins to protect troop carrier aircraft en route.

Serial. A compact formation of aircraft, under control of the formation commander, separated from other formations by time and space. Thus, a serial is comparable to a road-march unit.

Troop Carrier Units. Those air units which are organized, equipped, and trained primarily to transport troops, equipment, and supplies into combat, and to evacuate casualties, troops, and matériel.

Tug Airplanes. Airplanes used to tow other aircraft.

INDEX

☆ U. S. GOVERNMENT PRINTING OFFICE: 1952—951092