Joint Pub 3-17

Joint Tactics, Techniques, and Procedures for Theater Airlift Operations

18 July 1995

PREFACE

1. Scope

This publication provides fundamental principles and doctrine for the conduct of aerial delivery and airland delivery operations throughout the range of military operations.

2. Purpose

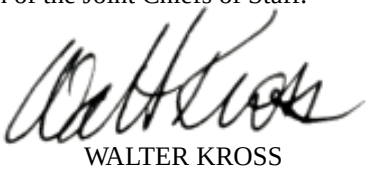
This publication has been prepared under the direction of the Chairman of the Joint Chiefs of Staff. It sets forth doctrine and selected tactics, techniques, and procedures (JTTP) to govern the joint activities and performance of the Armed Forces of the United States in joint operations as well as the doctrinal basis for US military involvement in multinational and interagency operations. It provides military guidance for the exercise of authority by combatant commanders and other joint force commanders and prescribes doctrine and selected tactics, techniques, and procedures for joint operations and training. It provides military guidance for use by the Armed Forces in preparing their appropriate plans. It is not the intent of this publication to restrict the authority of the joint force commander (JFC) from organizing the force and executing the mission in a manner the JFC deems most appropriate to ensure unity of effort in the accomplishment of the overall mission.

3. Application

a. Doctrine and selected tactics, techniques, and procedures and guidance established in this publication apply to the commanders of combatant commands, subunified commands, joint task forces, and subordinate components of these commands. These principles and guidance also may apply when significant forces of one Service are attached to forces of another Service or when significant forces of one Service support forces of another Service.

b. The guidance in this publication is authoritative; as such, this doctrine and selected tactics, techniques, and procedures will be followed except when, in the judgment of the commander, exceptional circumstances dictate otherwise. If conflicts arise between the contents of this publication and the contents of Service publications, this publication will take precedence for the activities of joint forces unless the Chairman of the Joint Chiefs of Staff, normally in coordination with the other members of the Joint Chiefs of Staff, has provided more current and specific guidance. Commanders of forces operating as part of a multinational (alliance or coalition) military command should follow multinational doctrine and guidance ratified by the United States. For doctrine and procedures not ratified by the United States, commanders should evaluate and follow the multinational command's doctrine and procedures, where applicable.

For the Chairman of the Joint Chiefs of Staff:



WALTER KROSS
Lieutenant General, USAF
Director, Joint Staff

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General Considerations for Theater Airlift Operations

Theater airlift consists of aircraft and ground assets assigned to a combatant commander other than the Commander in Chief, US Transportation Command, to provide common-user airlift in support of joint operations.

Effective employment of theater airlift forces requires an understanding of the **operational and organizational relationships** to other airlift forces. Operationally, the airlift mission links airlift terminals in a theater to other terminals within that theater, terminals within other theaters, or terminals within the continental United States. **Airlift's primary mission is to establish air lines of communications between air terminals**, as required for operations. Theater airlift forces have a dual identity; **they are both air operating forces as well as an element of the logistic support system**. Its most important operational characteristics--**flexibility and vulnerability**--make it a responsive, but potentially costly, asset to use. Theater airlift is usually divided between channel and special assignment airlift missions (SAAMs). There are **two basic methods** of airlift delivery: airland and aerial delivery. There are **five parameters** that affect the decision of which method to use: 1) the nature of the theater airlift operation, 2) user requirements, 3) the capabilities of available airlift forces, 4) the types of airlift terminals available, and 5) the

threat. **The demand** for theater airlift support **often exceeds the capacities** of the available force. Coordination between theater airlift operations and those of the strategic and organic forces must be arranged.

Command and Control of Theater Airlift Forces

Arrangements for the command and control of theater airlift forces have varied substantially over time.

A primary role of the **Air Force** is to provide airlift support to all Services. **Joint force commanders (JFCs)** should rely on their **Air Force component commanders** to supply the manpower with the expertise to plan and control theater airlift operations. Within the **Joint Air Operations Center**, an **airlift coordination cell** plans, coordinates, and manages the execution of theater airlift operations. The **Theater Air Control System** consists of fixed and mobile units and facilities that provide the **Air Operations Center** with the information and communications required to monitor the ongoing air operation and control Air Force aircraft in theater air operations. The **United States Transportation Command** effects the interface of theater and strategic airlift operations.

Apportionment, Allocation, Request, and Control of Theater Airlift Movements

Any organization in a joint force may request theater airlift support.

Theater airlift movements include **the air transportation of any distinct increment of passengers or materiel within theater boundaries by theater airlift forces** or by forces augmenting them. The JFC may elect to apportion the total expected theater airlift effort that should be devoted to the various users for a given period of time. A **request for theater airlift support** should be fulfilled based on (1) operational necessity versus convenience, (2) availability and suitability of alternate surface transportation modes, (3) Defense Transportation Movement priority system, and (4) the JFC's apportionment. **There are three categories of requests: planned, immediate, and emergency.** Validation is the assessment of the feasibility and value of an airlift requirement. **Army, Marine Corps, Air Force, Navy, and Special Operations Forces components are responsible for controlling their theater airlift movements** including performing and arranging to (1) bring units and material to departure terminals, (2) prepare those resources for air movement, (3) provide support services to transient and arriving units, (4) receive and transport units and materiel from arrival terminals, and (5) prepare all manifests, movement documents, and reports related to the actual movement. The purpose of these actions is to **move**

component resources expeditiously, with **minimum expenditure of theater airlift resources** and **minimum exposure to hostile actions**.

Planning Theater Airlift Operations

Theater airlift operations require extensive planning, preparation, and coordination.

Command responsibilities include **planning**, **developing intelligence**, **assembling participating forces**, **accomplishing training**, and **establishing security measures**. From the time an operation is announced until it ends, **participating echelons should coordinate and confer continuously**. The time available to plan and prepare an operation is directly related to the tempo of the overall operation. **Detailed planning** for the conduct of specific operations is performed by the participating component commands. Air movement planning is developed from the objective area back to the existing disposition of forces (backward planning). The sequence is as follows: overall tactical plan, landing plan, air movement plan, and marshalling plan. **The mission, operational concepts, rules of engagement and logistics** (landing, air movement, intelligence, operations security and counterintelligence, command, control, communications and computers systems, material collection and classification, enemy prisoners of war, medical support, weather, marshalling and withdrawal or restaging) **planning are the most important considerations** that influence the entire operation.

Marshalling

Marshalling is the process of assembling units or moving them to temporary camps near embarkation points to complete preparation for combat or to prepare for loading.

The marshalling area is usually located near departure camps and airfields to conserve resources and reduce the opportunity for observation. The Air Force component portion of the marshalling operation is developed during air movement planning and consists of **instructions regulating aircraft movement** and the **aircraft parking plan**. The JFC staff coordinates with administrative and logistic agencies for maximum support during marshalling. **The unit logistics officer prepares the marshalling plan.** For security reasons, marshalling should be accomplished quickly. The deploying unit, movement to aircraft loading sites, preparation of platform loads, cross-loading, and arrival airfield operations must all be planned and executed properly.

Aerial Delivery Operations

During aerial delivery planning and mission execution, the airborne force commander and airlift mission commander should coordinate with each other throughout the operation.

Clear command and control channels should be established in the theater of operations. The airdrop system should be designed to be responsive in supporting requirements. **Drop zones can be tactical, area, circular, or random approach**. Before dropping, commanders must consider airspeed, wind, altitude, size, run-in headings, and markings. The proposed use for the drop zone determines whether a **complete or tactical survey is done**. Separation times between personnel and equipment and the sequence of the drop are important considerations in an airdrop mission. **Free drops**, **high-velocity drops**, **low-velocity drops**, and **low-altitude parachute extraction** are all types of equipment airdrop.

Airland Delivery Operations

There are two types of airland operations that provide transportation within a theater or joint operations area.

The first type of airland operations is the routine movement of personnel and equipment within the theater during peacetime or contingency operations. **The second type is the airlanding of combat forces directly into an objective area** as the situation allows. Routine air movement is usually unopposed and uses secure airfields or well-established landing zones. These requirements may often exceed theater resources and considerations should be given to establish channel and SAAM missions for the regular movement of personnel, supplies, and equipment. **Certain phases of any airlift operation may be accomplished by airlanding combat troops and equipment directly to the objective area.** The JFC and component commanders should assess the situation to determine if the risk involved by using airland operations outweighs conducting aerial delivery operations. Units deployed to an area of operations by strategic airlift may be reloaded onto theater airlift for employment in the objective area. **Combat offloading** is a method of rapidly delivering palletized equipment and supplies from Air Force or Marine Corps aircraft. **Air direct delivery** is a strategic airlift mission which lands at a forward operating base and does not involve a theater airlift transshipment in conjunction with the strategic airlift.

CONCLUSION

This publication provides fundamental principles and guidance for the conduct of theater airlift operations across the range of military operations. It covers command and control and planning considerations for both airdrop and airland operations.

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CHAPTER I
GENERAL OVERVIEW

"Nine times out of ten an army has been destroyed because its supply lines have been severed."

Douglas MacArthur
Remarks to the Joint Chiefs of Staff, 1950

1. Basic Concepts

a. **General.** Theater airlift consists of **aircraft and ground assets**, **assigned to a combatant commander** (other than the Commander in Chief, United States Transportation Command (USCINCTRANS)) **to provide common-user airlift in support of joint operations**. The lowest practical level for assigning and operating common-user airlift forces has usually been at the theater level, though they could be assigned to a joint task force or subunified command. In certain circumstances, theater airlift forces may operate between theaters or between the continental United States (CONUS) and an overseas theater, though the United States Transportation Command (USTRANSCOM) normally conducts sustained or large-scale strategic operations.

b. **Relationships.** Effective employment of theater airlift forces requires an understanding of their operational and organizational relationships to other airlift forces. Operationally, **the airlift mission links airlift terminals** in a theater to other terminals within that theater, terminals within other theaters, or terminals within CONUS. **Airlift's primary mission is to establish air lines of communications (ALOCs) between air terminals**, as required for operations.

- The United States establishes ALOCs by coordinating the operations of three distinct components of airlift forces. **Strategic airlift forces** (also called intertheater or global airlift forces) primarily provide common-user airlift into theater terminals from outside the theater. **Theater airlift forces** primarily provide common-user lift between

Theater airlift operations provided for the timely distribution of cargo and passengers during Operations DESERT SHIELD/DESERT STORM—perhaps the most impressive short-term buildup of people and materiel in the history of warfare.

terminals within a theater. **Organic airlift forces**, drawn mainly from Service elements, are not common-user assets, and primarily provide specialized lift to specific users, usually between terminals within a theater.

- In daily operations, airlift forces sometimes operate at bases and **carry loads that overlap with the strategic, theater, and organic airlift missions**. They may also operate aircraft of the same type or design. These **operational and technological overlaps** have complicated many past efforts to establish distinct organizational boundaries between airlift forces. However, they also provide **an opportunity and an obligation to organize and operate each airlift force in ways that satisfy its primary customers**, while also maximizing the effectiveness of the overall theater airlift system.

c. **Purpose. Theater airlift forces exist to support the plans, operations, and priorities of the geographic combatant commander** by operating air transport aircraft and ground support assets for all theater forces. Theater airlift forces have a **dual identity**; they are both **air operating forces** and they are an **element of the logistic support system**. Planning and organization of theater airlift forces should reflect this dual nature.

THE BERLIN AIRLIFT

In the face of the aggressive post-WWII Soviet blockade of ground lines of communication to the city of Berlin, the United States, Great Britain, and France had to decide on an effective response within their military capabilities. While some debate took place, war was still fresh in most minds, and senior decision makers proceeded on the assumption that Berlin would be supplied by establishing an air line of communication.

The Berlin airlift was a massive effort to provide supplies, food, and fuel to the 2,500,000 civilian and military residents of West Berlin from 26 June 1948 until 1 August 1949. During this time, the airlift forces completed 266,600 flights and delivered more than 2,223,000 tons, demonstrating that airlift was a key instrument of international power. Among the myriad of details recorded concerning this operation is the systematic approach to planning and executing the airlift.

To use airlift capability to the greatest advantage, planners had to integrate the aircraft into a conveyor belt-type flow on narrow air corridors into and out of Berlin. By the beginning of 1949, airlifters were operating from eight into three airfields. Very quickly, limited airspace over the city and confined ground space at the three reception fields placed a premium on filling every "corridor slot" with an airplane and making good every landing time available. Ground control approach (GCA) was the primary controlling agency for all landings at Berlin, as it was the only landing system common to US and British forces. Initially, the airlifters used six separate altitudes for separation, but found that two altitudes were sufficient with a 6-minute separation per altitude. This meant a 3-minute takeoff interval at alternating bases. Near the start of the airlift, the planners laid out carefully designed routes, upgraded low-powered navigation beacons to 500 watts, and installed a visual-aerial range at each end of each corridor. British aircraft carried navigators and were less affected by navigation problems.

Such an aggressive plan, based on precise timing, required an extremely standardized flying system that called for strict aircrew discipline. Any variation by an individual aircraft created traffic problems that could have taken hours to untie. US crews coming from a variety of sources required a standardization board to prescribe techniques for each phase of flight, as well as a system of pilot checks every 30 days. All flights were conducted under instrument flight rules, with no variation allowed in approach patterns. Of the three corridors available, the northern and southern were limited to inbound traffic and the central to outbound. The airlifters needed this tight control because of the density of air traffic. All three Berlin terminals were within a 6-mile circle; at one point there was an aircraft movement every 30.9 seconds within this highly congested area.

The loading and unloading of the airlifters became an equally important function. European Command (EUCOM) organized an Airlift Support Command for all US Air Force cargo handling, which paralleled the British Army Air Transport organization. These units ensured the maximum payload utilization of each aircraft, to include marrying up as much heavy cargo with light, bulky cargo as possible. The aircraft operators would call in when about 10 minutes from landing at their departure field, and the cargo specialists started their movement of the next load to the designated parking spot; refueling occurred during reloading by the 12-man cargo team. Much cargo was manhandled through the C-54s' side doors in surprisingly fast time. One test showed that 10 tons of coal in bags could be hand loaded and tied down in 6 minutes, but average time was 15 minutes. Food and industrial loads, which were more difficult to handle, took 28 to 30 minutes. Forklifts worked well in the loading process when on a solid ramp but became hazards to aircraft during winter and spring muddy periods. The cargo handling experts found that a truck carrying the entire load was the best way to approach an aircraft. It reduced the risks of damaging an aircraft and no time was lost during switching trucks.

All of these actions were developed to maximize the flow of tonnage into Berlin, but they all hinged on the availability of aircraft. It took 319 of the Air Force's 400 C-54s to achieve the required in-commission rate in Germany. This involved complex scheduling, which constantly had to shuffle C-54s between the Berlin Airlift and other worldwide commitments. The planners also had to work for a smooth input to the 1,000-hour depot maintenance program so as to provide a predictable (and thus efficient) work load for that operation. After starting out with a shortage of maintenance personnel, which was relieved by hiring German nationals, and a spare parts shortage that was solved by airlifting from the United States, maintenance was able to meet the challenge.

In the final analysis, the Berlin Airlift was characterized by statistics, for numbers have a way of illustrating the magnitude of the effort: 2.231 million tons lifted; 67 percent was coal; 868 to 886 trips per day; one takeoff or landing every 60 seconds—around the clock; 567,537 flying hours—1,800 hours per day; 35 minute loading average—12 minute unloading average; 31 lives lost in 12 accidents—taxiing errors were the most common mishap; total cost—$181.3 million; 2.5 million people sustained in a round-the-clock, all-weather operation.

SOURCE: Miller, Charles E., *Airlift Doctrine*, Air University Press, 1988.

d. **Characteristics.** As shown in Figure I-1, theater airlift is a valuable **force enhancement asset**, but one that should be employed with great care. Its most important **operational characteristics**, **flexibility and vulnerability**, make it a responsive, but potentially costly, asset to use. Its principal **logistic characteristics**, **limited capacity and relatively short cycle time**, make it a precious resource to enhance key operations.

- The flexibility of the theater airlift system results from the **speed**, **range**, and **easily modified cargo configurations** of modern airlift aircraft, and from the **ability of modern communications** to link individual transport aircraft and support units into a responsive system. The flexibility of the theater airlift system is affected by its **logistic support requirements** and its **dependence on ground equipment** for some operations (which may not be available in desired locations or configurations). Another limitation is the **sensitivity of most airlift operations to weather factors** such as poor visibility and high winds.

- Properly organized, trained, and equipped **theater airlift forces usually can be shifted rapidly between missions and terminals**. For example, planes and crews dispersed on sustainment missions throughout an area of responsibility (AOR) can be concentrated for a large formation employment mission. Modern transport aircraft offer **increased mission flexibility** because they can be quickly reconfigured for a variety of loads (palletized and unpalletized cargo, rolling stock, passengers, and airdrop or extraction loads).

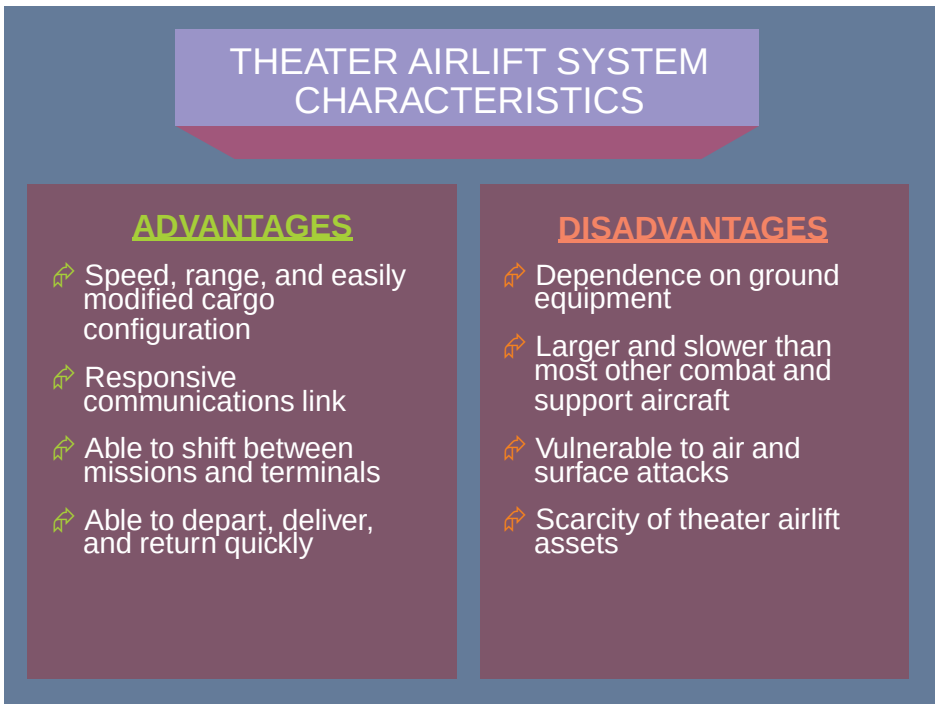

Figure I-1. Theater Airlift System Characteristics

Theater airlift capability provides joint commanders with quick, responsive transportation—a factor which may determine the success or failure of an operation or campaign.

- **Operating the entire theater airlift fleet at its optimal capacity each day** should not undermine its timely reaction to unforeseen emergencies or the shifting priorities of a theater campaign. **Attempts to bank theater airlift forces for later missions are usually ill-advised** because holding them in reserve entails the certain loss of irrecoverable daily transportation productivity.

- **Theater airlift aircraft are larger and slower than most other combat and support aircraft.** Similarly, theater airlift support units and command elements are organized and trained to provide only for their local security. Thus, **they are vulnerable to both air and surface attacks**. These vulnerabilities usually mean that **optimal theater airlift operations require a low-threat environment**. Ideally, large-scale or high-frequency airlift operations should be protected by local friendly air defense forces. Theater airlift forces can operate in higher threat environments by using aircraft equipped with defensive equipment or by accepting one or a combination of two operational penalties: higher loss rates or reduced efficiency, either as a consequence of their own defensive tactics or because of the diversion of other assets to defend them.

- Theater airlift forces may be limited in their ability to meet all likely demands for their assistance. The **scarcity of theater airlift assets** is a consequence of both their high cost (particularly of aircraft) and of limitations on the dimensions and weight of cargo that individual aircraft or ground support units can handle. The most effective allocation of these limited assets requires **careful prioritization** and **continual monitoring of movement and airlift missions** in response to changing requirements.

- The limited capacity of the theater airlift system can be offset somewhat by the **ability of transport aircraft to complete a full transportation cycle—departure, delivery, and return—more quickly than surface transportation**

modes. This advantage is more important when distances are long or no well-developed surface infrastructure exists. When time is critical, **theater airlift may be the only transportation available**, and its value to high-priority missions will be significant. Properly planned theater airlift can make certain operations and campaigns possible that would otherwise be logistically impossible.

e. **The central problem of theater airlift planning is maximizing theater airlift support for immediate requirements, while also maximizing its contribution to the long-term requirements of the overall campaign.** Airlift planners and operators should weigh the risks and benefits of each operation in relation to both the tactical needs of the user and the overall requirements and priorities of the joint force commander (JFC). As a general guideline, **theater airlift should not be tasked to fulfill a requirement that can be fulfilled by surface transportation assets**. To that end, operations should be planned to minimize demand for theater airlift to the extent allowed by mission requirements. Decisions regarding the systematic employment of theater airlift forces are operational level decisions and should be made by the JFC.

f. The operational and logistic characteristics of theater airlift require the airlift organizations to accomplish at least **four fundamental tasks**. First, the **basic priorities of the theater airlift effort should reflect the campaign plan** and consider operational priorities for available theater airlift forces. Second, **theater airlift capacity**, usually expressed in tons or sorties, **should be monitored on a frequent basis**. Third, **airlift forces should be specifically tasked, properly supported, and monitored** to achieve desired objectives. Last, **theater airlift operating forces should plan and execute their specific missions**, and transmit required statistical data back up through the logistic and operational systems. Generally speaking, tasks one and two are accomplished largely within the Joint Force Staff (J-3/J-4), while tasks three and four are accomplished largely within the command and control and operating echelons of the component providing the bulk of theater airlift assets.

2. Categories of Theater Airlift

Theater airlift operations are categorized in different ways for different purposes and are shown in Figure I-2.

a. Theater airlift is usually divided between channel and special assignment airlift missions (SAAMs). **Channel missions provide common-user general airlift service**, usually on relatively fixed schedules and route structures, over an extended period of time. However, channel missions can also be event driven, i.e., based on mission requirements to move cargo or personnel outside of the established schedule. **SAAMs provide dedicated airlift for specific requirements**, usually at times, places, and in load configurations requested by a specific user. SAAM operations may involve any level of activity, from a single aircraft sortie to operations involving large formations or many sorties over extended periods of time.

b. For scheduling purposes, theater airlift is conducted on either a recurrent or surge basis. **Recurrent operations establish a scheduled flow of individual aircraft** to make the most of available aircraft and ground support assets. However, such operations require low-threat environments because they often involve aircraft flying predictable schedules and route structures, making them relatively easy to detect and

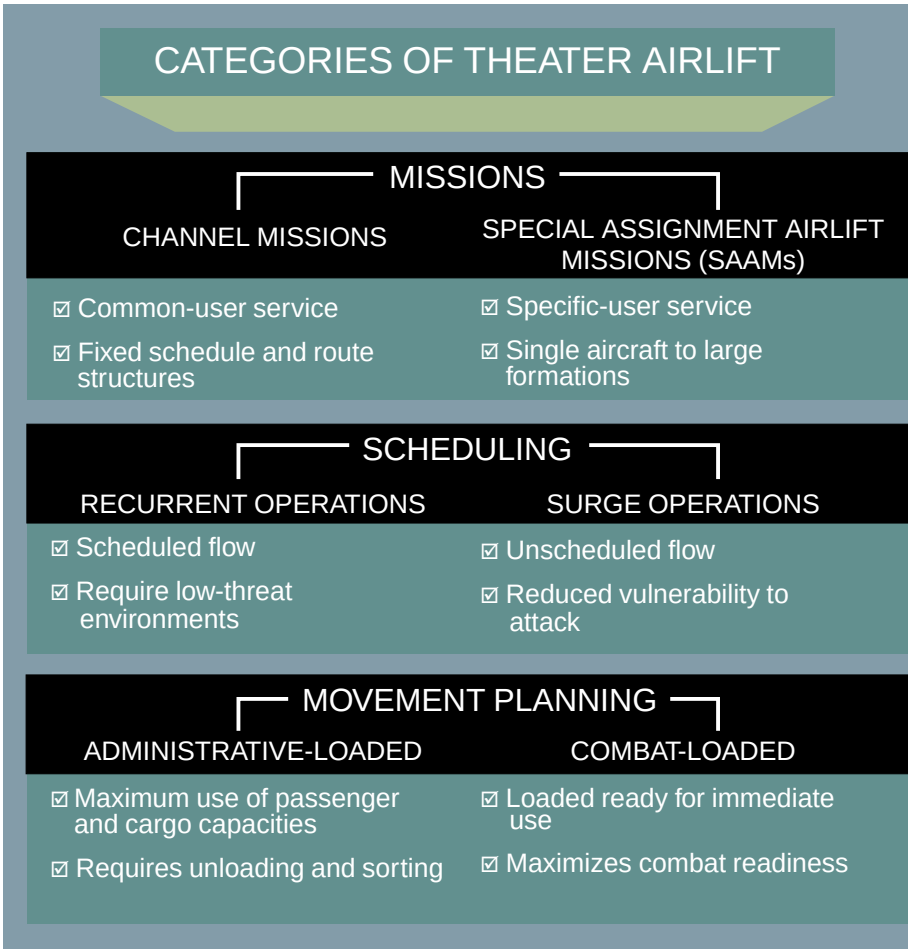

Figure I-2. Categories of Theater Airlift

attack. For other than low-threat environments, **surge operations maximize the ability of air defense forces to protect airlift assets** because they usually reduce movements in time and space, and thereby reduce their vulnerability to detection and attack. Surge operations may disrupt the efficiency of the overall theater airlift system. Aircraft already loaded and serviced may wait unproductively on the ground, for example, until all the aircraft in the surge are ready for the mission.

c. For movement planning purposes, theater airlift aircraft are either administrative- or combat-loaded. **Administrative-loading gives primary consideration to achieving maximum use of aircraft passenger and cargo capacities**, without regard to ground force tactical considerations. Administrative-loaded materiel usually requires unloading and sorting before it is used. **Combat-loading arranges personnel and materiel to arrive at their intended destination in an order and condition so that they are ready for immediate use.** Administrative-loading maximizes the use of the volumes and weight capacities of airlift aircraft, their allowable cabin load (ACL), while combat-loading maximizes the combat readiness of the organizations and equipment being moved.

d. For operational planning purposes, **most theater airlift missions perform one of six basic tasks, as shown in Figure I-3 and discussed below: deployment, employment, routine sustainment, combat sustainment, redeployment, or force extraction.** Each of these tasks is different and has specific applications to distinct phases of a campaign or operation. This categorization is useful because it relates directly to the problem of maximizing theater airlift support to immediate requirements, while also maximizing its contribution to the long-term requirements of the theater campaign.

- **Deployment** theater airlift operations involve the **administrative or combat movement of personnel, units, and materiel** into or within an AOR or joint operations area (JOA) before they engage in operations. Ideally, deployment airlift should operate in a low-threat environment. They can operate in higher threat environments, but their tactics, escort requirements, and objective area support requirements could reduce the throughput of the overall theater airlift system and individual aircraft cargo capacity. **Backhaul airlift**—the

Figure I-3. Theater Airlift Mission Tasks

efficient rearward movement of personnel, intelligence materials, mail, reparable items, and other materiel **could be an important planning consideration**, even at the start of a deployment operation.

- **Employment** theater airlift operations involve the combat movement of units as an integral part of their operations. Usually, employment airlift **moves combat-loaded units** to maximize their readiness for immediate combat operations. Given the assumption of immediate combat, **user requirements should drive scheduling and load planning**. However, for large-scale operations or increased threat situations, it may be necessary to adjust the user's plans or operations to accommodate the ACL limitations, tactical procedures, and defensive support requirements of the theater airlift force. In most cases, **employment airlift could be provided through surge operations**, given the requirement to deliver combat-ready units in the minimum time possible. **Defensive arrangements for both the forces and airlift assets involved depend on the situation**; they could possibly be high at the beginning of an operation and then taper off as the delivered units establish their operational effectiveness. **Backhaul airlift is seldom feasible or worth the risk during employment operations**, except for the rearward movement of essential items of intelligence, wounded personnel or other friendly evacuees.

- **Routine sustainment** theater airlift operations involve the **administrative air movement of materiel and personnel to reinforce or resupply forces** already deployed and/or employed in operations. **These operations normally deliver the user's requirements with the minimum expenditure of airlift resources.** Routine sustainment planning usually assumes that user requirements and the general air and ground security situation allow some flexibility in the actual delivery times of specific loads. Thus, flight schedules and load plans are usually made to get maximum throughput from available ACLs and support resources. When practical, **routine sustainment should be planned to utilize backhaul capacity**. Depending on theater and user priorities, typical backhaul loads might include wounded personnel, other friendly evacuees, enemy prisoners of war (EPWs), excess or reparable weapons and materiel of moderate to high value, as well as mail.

- **Combat sustainment** theater airlift operations involve the **combat movement of supplies, materiel, and personnel to reinforce or resupply units already engaged in combat operations**. Combat sustainment planning usually assumes that user requirements and general threat situations allow little or no flexibility in the delivery times, locations, and configurations of specific loads. **Flight schedules and load plans are usually driven by emergency combat requirements**, and perhaps the user's inability to receive and handle large increments of sustainment materiel. Thus, **the efficient utilization of ACLs and support resources is only a secondary consideration**. For example, a unit with limited organic transportation and/or storage capabilities might require daily resupply increments, even though the daily loads underutilize the ACLs of the supporting air transports. On the other hand, such circumstances might justify adding vehicles to a unit's table of organization and equipment if that would allow airlift planners to consolidate several sorties into one.

Given the exceptional risks involved for scarce and perhaps irreplaceable theater airlift assets, **combat sustainment requests should normally be restricted to absolutely essential requirements**. Combat sustainment usually involves individual aircraft or small formations employing combat tactics to deliver loads to terminals in close proximity to the enemy; it may also be conducted as an air flow operation, depending on requirements and threats. **Only essential backhaul requirements justify the increased risks** for theater airlift assets involved in these operations. Priority consideration should be given to retrograde of critical reparable items from forward areas to rear echelon repair activities.

- **Redeployment** theater airlift operations involve the **combat or administrative air movement of personnel, units, and materiel from deployed positions** within an AOR or JOA. Redeployment operations are conducted to move the maximum force in the minimum time or with the fewest resources possible. They normally require a low-threat situation. **If circumstances permit, backhaul should be accomplished** with whatever capacity is not used by the primary movement.

- **Force extraction** theater airlift operations involve the **combat air movement of personnel, units, and materiel from positions in the immediate vicinity of enemy forces**. Because the purpose of these movements may range from withdrawal operations to the lateral movement of forces to new operating locations, **the relationship of operational and logistic considerations can vary widely**. These operations generally are planned to accomplish a movement with the minimum expenditure of airlift resources. However, in higher threat situations it may also be necessary to preserve the combat capabilities of departing units for as long as possible at the departure terminal, while building them up as rapidly as possible at the arrival terminal. In such cases, operational requirements may be more important than the efficient use of ACLs. In the latter stages of a complete extraction of friendly forces from a combat area, **planners should provide suitable operational assets** to protect both the extracting forces and the airlift forces engaged in their movement. **Extractions are logistical backhaul operations**. Commanders must evaluate the risk of extracting materiel as compared to the impact of abandonment and replacement.

3. Methods of Airlift Delivery

a. There are two basic methods of airlift delivery: airland and aerial delivery. Because each offers a particular set of advantages and disadvantages to airlift users and providers, selecting the best method of delivery for a particular airlift requirement is a key planning decision. See Figure I-4.

b. **Theater airlift terminals** are those places where theater airlift aircraft **onload or offload personnel and materiel**. **A terminal may be an airfield, a landing zone, a drop zone, or an extraction zone.**

- **An airfield is an area prepared for the accommodation** (including any buildings, installations, and equipment), **landing, and take-off of aircraft.** Emphasis here is placed on the word "prepared" because airfields are usually pre-existing facilities, with the hard-surface runways, extensive ground operations areas (for taxiing, parking, cargo handling, and other appropriate uses), and support infrastructures required for sustained airlift operations.

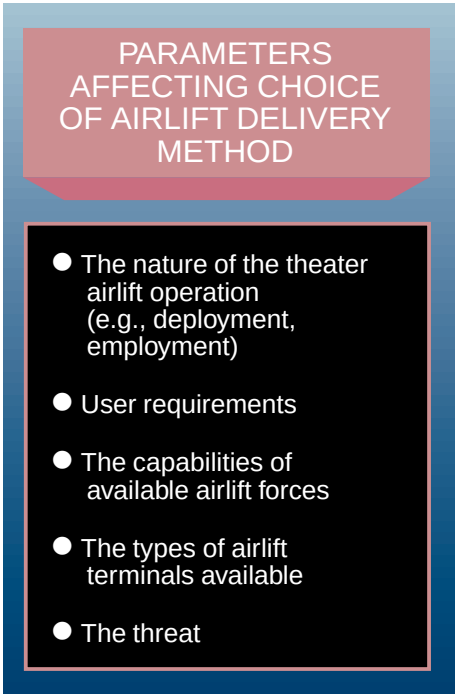

Figure I-4. Parameters Affecting Choice of Airlift Delivery Method

These attributes usually make airfields the **best available locations for theater airlift main bases**, and the **best available terminal for deployment, redeployment, and large-scale employment operations**. In addition to prepared airfields, the C-130 and C-17 aircraft can use what is called a **small austere airfield (SAAF)**. A SAAF is an unsophisticated airfield, usually with a short runway and limited in one or a combination of the following: taxiway systems, ramp space, security, materiel handling equipment (MHE), aircraft servicing, maintenance, navigation aids, weather observing sensors, and communications. **The greatest disadvantage of airfields is their relatively limited availability**, particularly in lesser-developed regions of the world. Many of the available facilities may have limited space as a result of other combat forces beddown. They may be targeted as the focus of enemy forces and are often too far from surface combat units to be efficient destination terminals for combat sustainment operations.

- **A landing zone (LZ) is any specified zone used for the landing of aircraft.** In the theater airlift context, LZs are usually less sophisticated than airfields, with **facilities meeting only the minimum requirements of anticipated operations** by specific aircraft. They may vary from isolated dirt strips with no off-runway aircraft-handling areas to hard surface airfields with limited support infrastructure. The main advantage of LZs is that **in most cases it is possible to find or construct one nearer ground combat units than existing airfields**. A close-by, but less sophisticated LZ offers fewer delays in providing airland resupply to forward deployed troops. **The parameters for selecting and preparing LZs are many, but they usually include:** (1) anticipated capacity requirements, (2) the nearness of the LZ to the user, (3) the operating and defensive requirements of the aircraft expected to transit the field, and (4) the time and engineering capabilities available and required to open and/or maintain the LZ. If MHE and maintenance support at an LZ are limited or unavailable, engines running offloads might be required to permit the expeditious departure of vulnerable aircraft. **When cargo to be discharged is palletized, combat offload methods are available.** These methods call for the aircraft to gradually taxi forward as pallets are discharged onto the ground or onto support devices such as 55-gallon drums. Although these operations do not require crews with special qualifications, they are inherently hazardous and must be executed with extreme care.

- **A drop zone (DZ) is a specific area upon which airborne troops, equipment, or supplies are airdropped.** Although DZ locations are normally on relatively open, flat terrain, **they can in fact be situated on almost any site** (including water) suited in size and shape for the intact delivery and recovery of the airdropped personnel and materiel. **Key circumstances to consider in evaluating the usefulness of a DZ are:** (1) **enemy threats** in relation to the capabilities of available supporting forces to defend the air and ground phases of the airdrop, (2) its **tactical advantages** (nearness to the tactical objective or receiving unit, size, defense, and other such advantages) in relation to other available DZs, (3) the **probable tactical effects** (delays, disorganization, injuries, and damage) of any hazardous obstacles (ditches, trees, rocks, and other such obstacles) located on it, (4) **accessibility** of the drop zone to the supported force or the airdrop force, and (5) **terrain** surrounding the DZ that might limit DZ run-in or DZ escape maneuvers. Selecting a DZ thus involves a judicious exercise of the military art, but historical experience suggests that **planners of urgent military operations usually find usable DZs near or even adjacent to tactical objectives and receiving units**.

- **An extraction zone (EZ) is a specified drop zone** used for the delivery of supplies or equipment by means of an extraction technique from an aircraft flying very close to the ground. This technique is known as **low-altitude parachute extraction system (LAPES)**. Because the aircraft must fly a specific approach to the zone and extracted loads slide for some distance before stopping, **extraction zones have terrain and approach obstacle clearance requirements similar to those for minimal LZs**, though they are not as long. Thus, the parameters for selecting and developing EZs are similar, though less extensive than those for selecting LZs.

c. **The different methods of airlift delivery form a complementary system** that can deliver at least some of a unit's equipment requirements, and virtually all of its personnel and sustainment materiel requirements at any time under most conditions of terrain and weather. Thus, to provide maximum support to theater units, **airlift planners and operators should understand the specific capabilities and constraints of each of the airlift delivery methods** described below.

- **In the airland delivery method, airlifted personnel and materiel are disembarked, unloaded, or unslung from an aircraft after it has landed** or, in the case of vertical takeoff and landing aircraft, after it at least has entered a hover. **Airland delivery is usually the most efficient delivery method for the following reasons:** (1) it allows a greater degree of unit integrity and capability to rapidly employ units after landing, (2) it carries the least risk of injuring personnel and damaging loads, (3) it requires minimal specialized training and equipment for transported personnel, (4) it seldom requires special rigging of materiel, and (5) it permits the maximum utilization of ACLs by eliminating the volume and weight penalties of preparing loads for airdrop deliveries. Another advantage of the airland delivery method is that it maximizes the opportunity to backhaul or evacuate cargo and personnel. **The principal disadvantages of airland operations are as follows:** (1) they require airfields or LZs that are moderately level or unobstructed and may or may not be available or

adequate for the anticipated operation; (2) they may increase mission intervals depending on airfield size, offload equipment availability, and airfield support capability; (3) they require more time for delivery of a given size force than parachute delivery; (4) they normally require airlift mission support such as ground-handling and transportation assets; and (5) they may prolong and intensify the exposure of the aircraft operating at forward fields to ground or air attacks. However, because the operational tactics and rapid offloading techniques of various theater airlift aircraft can minimize these disadvantages, **planners should view airland delivery as the option of first choice for most air movements**.

- **In the various aerial delivery methods, airlifted personnel and materiel are disembarked or unloaded from aircraft still in flight. Aerial delivery is often militarily advantageous, because it** (1) permits sustainment deliveries to units operating away from airfields and LZs, (2) permits the delivery of combat forces and materiel, concentrated and in mass, in minimum space and time, and (3) some airlift aircraft can accurately airdrop personnel and materiel in conditions of poor visibility that would otherwise preclude airland operations (e.g., using the adverse weather aerial delivery system). **In relation to airland delivery, aerial delivery has several disadvantages.** It (1) carries an increased risk of injury to personnel or damage to cargo, (2) requires special training for the riggers, transported personnel, and the aircrews, (3) can limit ACL utilization substantially because of the special rigging required for airdropped materiel, (4) has ground wind limitations, and (5) if employed by a large formation, represents an operational level risk, because detection and successful attack by the enemy could rob the theater campaign of two critical assets the airlift force and the unit and/or materiel being carried. Accordingly, **the decision to utilize the aerial delivery method is predicated on determining if a user's requirements justify the expenditure of scarce and costly airdrop resources**.

- **The extraction method is a type of aerial delivery that can be conducted by C-130 and C-17 aircraft using LAPES.** LAPES is a low cost, highly accurate delivery method providing critical low-level tactical capability which enhances survivability in certain threat environments. It requires the aircraft to fly an approach similar to a landing, except **the extraction is performed with an optimum aircraft wheel height of only 5 to 10 feet above the ground**, much lower than the airdrop system. **LAPES may be the preferred method of delivering supplies or equipment under the following conditions:** (1) when winds exceed limitations for low-velocity airdrops, (2) when greater accuracy is required because of restricted terrain and other obstacles, (3) when an airfield or LZ has been cratered and lacks adequate repair equipment, (4) when enemy defense capabilities present an unacceptable threat to airlift aircraft at normal drop altitudes or at rest on the ground, (5) when there are requirements for reduced aircraft exposure in the immediate vicinity of the objective area due to a localized threat. **The disadvantages of LAPES include the following:** (1) extractions require a relatively flat, smooth area that is specially prepared before it can be used; (2) the terminal area and aircraft approach paths need to be free of flight obstructions; (3) it has

greater potential for destruction of extracted equipment and supplies than airdrop; (4) it requires limited and specialized LAPES platforms, aircraft, and loading equipment; (5) the number of trained aircrews available to perform this mission is very limited; (6) it is usually not the most effective use of the aircraft ACL; and (7) sustained resupply by LAPES is limited, because only a few aircrews are qualified to perform the LAPES mission (a 30- to 60-day lead time is required to adequately train a sustainment force with LAPES capability).

4. Augmentation of Theater Airlift

a. **General. The demand for theater airlift support often exceeds the capacities of the available force.** In broad terms, JFCs may satisfy these excess demands by adjusting operations or priorities to reduce them to manageable levels, or by arranging to augment their theater airlift force from other airlift forces. **A ready means of augmentation** (and one that should be an ongoing effort) **is close coordination between theater airlift operations and those of the strategic and organic forces**. This coordination may include adjusting schedules, routes, and cargo loads, thus enhancing theater airlift's capability to satisfy the JFC's requirements. Beyond coordination, JFCs may divert some of the organic airlift forces under their command to the theater airlift effort, or they may seek augmentation from other theaters or from USTRANSCOM. In any case, **augmentation should be accomplished under the command authority guidelines provided in Joint Pub 0-2**, "Unified Action Armed Forces (UNAAF)." At the same time, any diversion of forces to the theater airlift effort imposes some cost on the missions and organizations they were primarily established to support. JFCs should weigh these benefits and costs carefully before authorizing any augmentations of theater airlift.

b. **Aircraft.** In theory, almost any aircraft could contribute to the theater airlift mission. In practice however, **the bulk of theater airlift is normally done by fixed-wing transports provided by the Air Force component**, while some limited or specialized missions may be accomplished by fixed- and rotary-wing aircraft provided by other Services. It is important to consider that aircraft performance characteristics will be directly affected by such factors as gross weight, atmospheric conditions, runway length and condition, and flight obstacles as outlined in Service publications. Accordingly, only their general applicability to the theater airlift mission is described here.

- The bulk of the Air Force's air transport fleet consists of **aircraft designed or modified to serve a broad range of military airlift operating requirements**. These aircraft types include the C-5, C-l7, C-27, C-130, and C-141. Additionally, **the Services operate more specialized fixed-wing transports**, which, though not originally acquired to meet a broad range of theater airlift missions, are capable of performing parts of it quite effectively. These aircraft types include the C-2, C-9, C-l2, C-l8, C-l9, C-2O, C-21, C-22, C-23, C-26, CP-3, KC-10, KC-130, KC-135, T-43, 727, and 747.

- The principal advantage of fixed-wing aircraft over surface transportation modes is that **they combine speed** (250 to 500 knots, depending on the type) **with substantial to very large cargo capacities** (7 to over 100 tons) providing the capability to move quickly large amounts of personnel and materiel over greater distances. The combination of

The Nation's transport fleet includes aircraft with a broad range of airlift capability able to augment theater airlift as required.

their speed and tactics also **enhances their survivability**, while their range generally allows them to be based in relatively secure and logistically easier-to-support rear areas. **The principal disadvantages are their terminal requirements**, which can limit their flexibility, **and their size and limited maneuverability**, which increases their vulnerability to ground and air attack. These disadvantages are particularly pronounced for the larger transports. Under most circumstances smaller transports, such as the C-27 and C-130, are usually suited to a sustained theater airlift role, while the larger transports primarily perform the strategic airlift role.

- **Services also operate rotary-wing aircraft**, such as the H-1, H-3, H-60, and CH-46, CH-47, and CH-53, which possess intrinsic theater airlift capabilities. **Rotary-wing aircraft can be useful to theater airlift purposes for the following reasons:** (1) their ability to operate at smaller undeveloped landing zones increases their flexibility and often reduces ground-transit times for their loads, (2) their terrain-hugging flight capabilities enhance their survivability in threat situations, and (3) their ability to sling-load some types of materiel allows them to pick up and deliver loads with minimal ground-handling delays. However, in relation to fixed-wing aircraft, their inherent **aerodynamic inefficiencies sharply restrict their payload and range capabilities**, and their mechanical characteristics give them a **high ratio of support-man-hours to flight-hours**. **Consequently, rotary-winged assets** (1) usually are not suited to sustained airlift operations beyond about 50-100 nautical miles from a refueling point, (2) usually require more maintenance hours per hour of flight time, and (3) are usually based at landing zones not well suited to large-scale, sustained airlift operations.

- For these reasons, airlift-capable **rotary-wing assets are normally assigned as organic combat and combat support elements to surface combat organizations**. Thus, in deciding to use the capabilities of any organic rotary-wing assets to support the theater airlift effort, the JFC should consider their vital importance to their assigned

Rotary-wing aircraft, because of their flexibility, survivability, and versatility, are better suited for some support missions than their fixed-wing theater airlift partners in certain situations.

organizations, as well as their utility to specific airlift missions. **Theater airlift requirements that might best be filled by rotary-wing aircraft could include large requirement, short-distance operations**, such as unloading ships at undeveloped water terminals, or routine small-payload operations to sites not collocated with landing zones, such as daily courier flights to deployed air defense units.

5. Military Operations Other Than War

Military Operations Other Than War (MOOTW) encompass a wide range of activities where the military instrument of national power is used for purposes other than the large-scale combat operations usually associated with war. Although these operations are often conducted outside the United States, they also include military support to US civil authorities. MOOTW usually involve a combination of air, land, sea, space, and special operations forces, as well as the efforts of governmental agencies and nongovernmental organizations in a complementary fashion. Theater airlift is instrumental to the Armed Forces' ability to perform in this wide range of operations from combat airdrops in Operation JUST CAUSE, to channel missions above the Arctic circle, to airlift in Bosnia. Common concepts applicable to MOOTW are discussed in Joint Pub 3-0, "Doctrine for Joint Operations" and Joint Pub 3-07, "Joint Doctrine for Military Operations Other Than War." Planners should realize however, that **support requirements may impose unique doctrinal and operational demands on theater airlift**. In such cases, theater airlift planners and users should collaborate to assess and accommodate these demands throughout the period of operations. For theater airlift planners, the key to successful employment in such operations lies in a **thorough review of the relevant joint and Service publications, tactics manuals, and intelligence data**. For operators, the key to success is an equally thorough knowledge of those sources of information, along with a **full appreciation of the unfolding operational situation**, and **aggressive flexibility**. Joint Pubs 3-0, "Doctrine for Joint Operations," and 3-07, "Joint Doctrine for Military Operations Other Than War," address planning considerations, but by way of illustration, **successful airlift in MOOTW may require:**

Theater airlift operations in support of MOOTW require planners and operators to be prepared to support a wide range of activities.

a. **Ground or airborne alerts**, in which transport aircraft are reserved, or banked, while awaiting clearance to conduct specified operations into hazardous or unsettled situations. These operations might include evacuations, relief flights, antiterrorist raids, or quick-reaction strikes.

b. **Special support personnel**, such as translators or US or foreign diplomatic officers, to facilitate aircraft ground operations and security at remote sites.

c. **Security escorts** to protect aircraft and crews from criminal, terrorist, or mob actions at isolated locations.

d. **Additional communications support** to link individual aircraft and formations to non-standard users, command agencies, rescue forces, or intelligence sources.

6. Special Operations

Theater airlift forces provide valuable support for the special operations forces (SOF) in the joint force. For routine logistic requirements, SOF units request theater airlift support through their respective supporting Service component, in accordance with the procedures and priorities described in Chapter III, "Apportionment, Allocation, Request, and Control of Theater Airlift Movements." When SOF units require theater airlift to perform special operations-specific missions which require specially trained and equipped airlift forces, they should transmit their request through their SOF command channels. **Theater airlift personnel**, particularly aircrews, expected to provide employment airlift support to SOF **should be fully incorporated into the SOF operation planning process, and**, if necessary, **entering into isolation for tactical rehearsals**. On the other hand, airlift aircraft and crews should not be taken out of the airlift system any longer than necessary to prepare them for the anticipated operation. Standing down aircraft for longer periods could waste valuable lift capacity and increase the signature of the SOF's preparation phase. Although it is possible for SOF to provide some common-user airlift to the theater if directed by the JFC, this would only be done in exceptional cases.

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CHAPTER II
COMMAND AND CONTROL OF THEATER AIRLIFT FORCES

"It is no great matter to change tactical plans in a hurry and to send troops off in new directions. But adjusting supply plans to the altered tactical scheme is far more difficult."

General Walter Bedell Smith

1. General

Arrangements for the command and control of theater airlift forces have varied substantially over time. Organizationally, some have emphasized unity of command at the theater air force level, while others stressed the operational and logistics linkages between theater and strategic airlift. Other considerations have included the scope and duration of operations, overarching theater organization, geography, and communications capabilities. Most of these arrangements successfully provided airlift support within a given operational context. **This chapter provides broad command and control guidelines**, rather than an organizational prescription for all cases.

2. Broad Guidelines

A primary role of the Air Force is to provide airlift support to all Services. **JFCs should rely on their Air Force component commanders (AFCCs) to supply the manpower with the expertise to plan and control theater airlift operations.** Those operations should be organized, commanded, and operated in accordance with the doctrine and principles prescribed in appropriate joint publications, including Joint Pub 0-2, "Unified Action Armed Forces (UNAAF)," Joint Pub 3-0, "Doctrine for Joint Operations," and Joint Pub 3-56.1, "Command and Control for Joint Air Operations." **The AFCC or joint force air component commander (JFACC)**, if established, **will normally exercise operational control (OPCON)** of common-user theater airlift forces. **In cases where the assigned JFACC is other than Air Force, the AFCC should supply the personnel with airlift expertise to the joint air operations center (JAOC) to run the theater airlift operation.** The JFC may specify the type of command authority (i.e., operational control, tactical control, support) or coordinating authority to be exercised by the JFACC (if established) or the AFCC over any forces allocated to augment theater airlift operations.

3. The Joint Air Operations Center

A JAOC (air operations center (AOC) if a JFACC is not designated) **is the organization through which the JFACC controls joint air operations, including theater airlift**. Within the JAOC, an airlift coordination cell (ALCC) plans, coordinates, and manages the execution of theater airlift operations.

a. **The Airlift Coordination Cell.** The exact organization of the ALCC will be dependent upon the requirements of the JFC and in the JFACC's (or AFCC's) concept of organizing and operating the JAOC. **Normally, the ALCC will consist of an airlift plans branch, an airlift operations branch, and an airlift support branch.** These airlift elements, though consolidated in the ALCC, will coordinate with various AOC planning and operational elements.

Figure II-1. Theater Airlift Command and Control Organizations

The JFACC normally exercises control of the ALCC through the JAOC director. As part of the JAOC director's staff, **the Chief, ALCC, plans, coordinates, and manages the execution of theater airlift operations with assigned forces**. The ALCC will coordinate with the **air mobility element (AME)**, (or Air Mobility Command's (AMC's) tanker airlift control center (TACC), if no AME is established in theater), the **joint movement center (JMC)**, and the **director mobility forces (DIRMOBFOR)** if designated. In those cases where the JFACC is other than Air Force, the JFC should task the AFCC to augment the Chief, ALCC, with knowledgeable personnel to support operations in the JAOC.

b. This **centralized control** and **decentralized execution** enhances the timely integration of theater airlift into the overall theater air effort and, consequently, into the theater campaign as a whole.

4. The Theater Air Control System (TACS)

The AOC serves as the central node of the Air Force command and control system called the TACS. The TACS, which also comprises the Air Force element of the Army/Air Force Air-Ground Operations System, consists of **fixed- and mobile-units and facilities** that provide the AOC with the information and communications required to monitor the ongoing air operation and control Air Force aircraft in theater air operations. The broad organization and functions of these units and facilities are discussed here in their relationship to theater airlift.

a. **Control and Reporting Center (CRC).** Directly subordinate to the AOC and charged with broad air defense, surveillance, and control functions, **the CRC provides the means to flight-follow, direct, and coordinate the support and**

defense of theater airlift aircraft and formations operating in the area of operations.

b. **Tactical Air Control Party (TACP).** TACPs consist of **Air Force personnel equipped and trained to assist US ground commanders** to plan and request tactical air support, including theater airlift.

c. **Wing Operations Center (WOC).** As the command and control facility of Air Force wings, **WOCs provide control and communications facilities** to link wing commanders to the AOC and enable them to command their forces. To facilitate joint operations, Army Ground Liaison Officers or other component representatives may be assigned to a WOC.

d. **Tanker Airlift Control Element (TALCE).** TALCEs are **mobile command and control units deployed to support strategic and theater air mobility operations**. When deployed specifically to support theater air mobility operations, TALCEs should be attached to the command of a geographic combatant commander as an element of the TACS. TACC decisions to position TALCE assets will be based upon strategic and theater mobility support requirements. It is a theater responsibility to identify requirements for such support.

e. **Mission Support Team (MST).** Smaller than TALCEs, **MSTs perform similar functions at locations where airlift command and control otherwise would not exist**.

f. **Combat Control Team (CCT). CCTs are small, task-organized teams of Air Force parachute and combat diver-qualified personnel**, trained and equipped to quickly establish and control drop, landing, and extraction zone air traffic in austere or hostile conditions. These teams **survey and establish terminal airheads** as well as **provide guidance** to aircraft for airlift operations. They provide **command and control** and **conduct reconnaissance, surveillance, and survey assessments** of potential airfields or assault zones and **perform limited weather observation** and removal of obstacles or unexploded ordinance with demolitions.

g. **Theater Airlift Liaison Officers (TALOs). TALOs are rated airlift officers aligned under TACPs supporting the Army** at corps, division, and separate brigade or regiment levels. **AMC liaison officers (LNOs) are normally assigned to a Marine expeditionary force.** The AMC LNOs perform similar functions as the TALOs, but are not designated as TALOs. **TALOs advise ground commanders** on the capabilities and limitations of airlift, and assist in planning, requesting, and using airlift resources.

h. **Airborne Elements.** As airborne command and control nodes of the TACS, the **airborne battlefield command and control center (ABCCC)** and the **Airborne Warning and Control System** may perform AOC functions in support of theater airlift operations. This may occur either early in a campaign (before the regular AOC is established) or during operations conducted in the presence of enemy air and ground threats.

i. **Director of Mobility Forces. A DIRMOBFOR may be established to assist in the coordination of airlift issues within the theater.** The DIRMOBFOR will normally be a **senior officer** who is familiar with the AOR or JOA and has an **extensive background in airlift operations**. The DIRMOBFOR may be sourced from the theater's organizations, or nominated by USTRANSCOM, or United States Atlantic Command. When established, **the DIRMOBFOR serves as**

the designated agent of the JFACC or AFCC for all airlift issues. The DIRMOBFOR exercises coordinating authority between the ALCC, AME (or TACC if no AME is deployed), JMC, and the JAOC in order to expedite the resolution of any airlift problems.

Airlift can be diverted from strategic operations to support a theater airlift effort on a sortie-by-sortie basis without basing large transports in the theater.

5. Control of Augmenting Forces

a. In accordance with the Joint Pub 0-2, "Unified Action Armed Forces (UNAAF)," **the Secretary of Defense can augment airlift forces in a theater** by either assigning or attaching additional forces to a geographic combatant commander. **Assignment** is usually done to satisfy long-term requirements, while **attachment** of forces is usually done to satisfy short-term requirements.

b. Alternatively, **strategic airlift aircraft can augment the theater airlift effort on a sortie basis**, under an appropriate tactical control or support relationship between commands. Sortie augmentation is accomplished by **scheduling inbound strategic transport aircraft to fly one or more local sorties before returning to strategic operations**. Ideally, these strategic diversions should not require strategic aircraft to remain at theater bases for longer than routine loading and servicing operations would require. Under such circumstances, **the sortie augmentation system has the advantage of reinforcing theater lift** without basing large transports or their extensive support infrastructures in the theater.

6. Command and Control of USTRANSCOM Mobility Forces

USTRANSCOM command and control affects the interface of theater and strategic airlift operations.

a. **USCINCTRANS exercises combatant command (command authority)** of assigned airlift forces. **The Commander, AMC, exercises OPCON** of USTRANSCOM-assigned airlift assets through the Commander, TACC. **The exception is the Commander, Air Combat Command, who exercises OPCON of C-130s.**

b. **The AME deploys to the theater as an extension of the AMC TACC upon request.** They **coordinate with the theater airlift management system** and **collocate with the JAOC** (or AOC) whenever possible. They provide **coordination and interface** of the strategic air mobility system (airlift and air refueling) with the theater air logistics system. The AME **assists and advises the DIRMOBFOR**, when established, on matters concerning strategic air mobility assets. **AMC retains OPCON of the AME** and will organize and manage the AME to support USTRANSCOM's global requirements. Upon request, USTRANSCOM may also establish a **Transportation Liaison Office** with the Joint Force J-3/J-4 to provide assistance on air mobility issues. The corporate efforts of the AME, ALCC, and the Tanker Cell ensure the seamless execution of air mobility operations in support of the theater.

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CHAPTER III
APPORTIONMENT, ALLOCATION, REQUEST, AND CONTROL OF THEATER AIRLIFT MOVEMENTS

"Victory is the beautiful, bright-colored flower. Transportation is the stem without which it could never have blossomed."

Winston Churchill

1. General

Theater airlift movements include the air transportation of any distinct increment of passengers or materiel within theater boundaries by theater airlift forces, or by forces augmenting them. These are complex activities, involving numerous actions and extensive coordination among many individuals and organizations. **Theater airlift assets support movements requested and controlled by components of the joint force.** General guidelines for these actions are included in numerous publications, but most importantly Joint Pub 4-0, "Doctrine for Logistic Support of Joint Operations," Joint Pub 4-01.1, "JTTP for Airlift Support to Joint Operations," and Joint Pub 4-01.3, "JTTP for Movement Control." **This chapter focuses on procedures related to assigned or attached theater airlift forces.**

2. Apportionment

The JFC may elect to apportion the total expected theater airlift effort, by percentage or by priority, **that should be devoted to the various users for a given period of time**. If JFCs elect to make apportionment decisions, it usually is done in consultation with their component commanders and their appropriate logistic representatives, their own operational and logistic staffs' J-3 or J-4, particularly J-4 staff elements such as Logistics Readiness Centers, Joint Transportation Boards and JMCs. Failure to establish and maintain a priority system can cause an inflation of subordinate requests and loss of control over the theater airlift system.

3. Allocation and the Joint Movement Center

Allocation is the translation of the CJCS priority system or the JFC's apportionment into the total daily airlift capacity or sorties available for each user or operation. Because unanticipated and high priority requirements demand continual adjustments of the airlift effort, **JFCs usually assign daily allocation responsibilities to their J-4s**. **They in turn, typically pass the tasking to their JMCs.** In keeping with their general responsibilities, **JMCs usually** (1) validate specific component theater airlift requests, (2) monitor component planning and control of the resulting movements, and (3) monitor and report on the condition, performance, and capabilities of the theater airlift system.

4. Requests

Any organization in a joint force may request theater airlift support. Requests should be fulfilled based on (1) operational necessity, versus convenience, (2) availability and suitability of alternate surface transportation modes, (3) Defense Transportation Movement priority system, and (4) the JFC's apportionment. **Commanders and logistic planners should not hesitate to request theater airlift** if air movement truly enhances an assigned mission. The effectiveness of the

JMC's daily airlift allocation depends on its awareness of all legitimate requirements. Once made, airlift **requests are handled through component logistic channels**, with variations for the immediacy of the request. See Figure III-1.

a. **Planned Requests. When air movement requirements are known or projected in advance, they are handled as planned requests through normal logistic channels.** Channel missions and most SAAMs result from planned requests. In all cases, **the JMC should task planned requests within the operational lead time** established by the AFCC. Lead time is the time required to source, task, and generate actual missions in support of a specific requirement. **Lead time varies**, depending on the scale of the request, available forces, and the theater air planning process.

b. **Immediate Requests. When air movement requirements are identified too late for normal air tasking order tasking cycle coordination, they are handled as immediate requests.** Immediate requests are usually made to satisfy urgent employment, sustainment, or extraction requirements. Once identified at an appropriate level within a component, **they are transmitted directly to the JAOC**, normally by a TALO, through operational channels. This allows the JAOC to make preparations for the required missions, while the actual request is staffed expeditiously through logistic channels. Because the theater airlift force is normally fully employed, the JMC may fill validated immediate requests by redirecting sorties supporting planned requests.

c. **Emergency Requests. Short notice air movement requirements** (ones that must be satisfied before the JMC can issue a formal tasking) **will be handled as emergency requests**. Emergency requests are usually made to satisfy **pressing tactical requirements**, such as the evacuation of wounded or the immediate resupply of units engaged in combat. **They are usually coordinated as immediate requests with two procedural variations.** All required approvals, validations, and taskings may be accomplished by voice and backed up later with the routine documentation. The JAOC Director, representing the JFACC, may also divert theater airlift forces supporting planned requests before receiving a verbal tasking from the JMC. In such a case, the JAOC Director should advise the JMC, as soon as practical, of the action and the pending request.

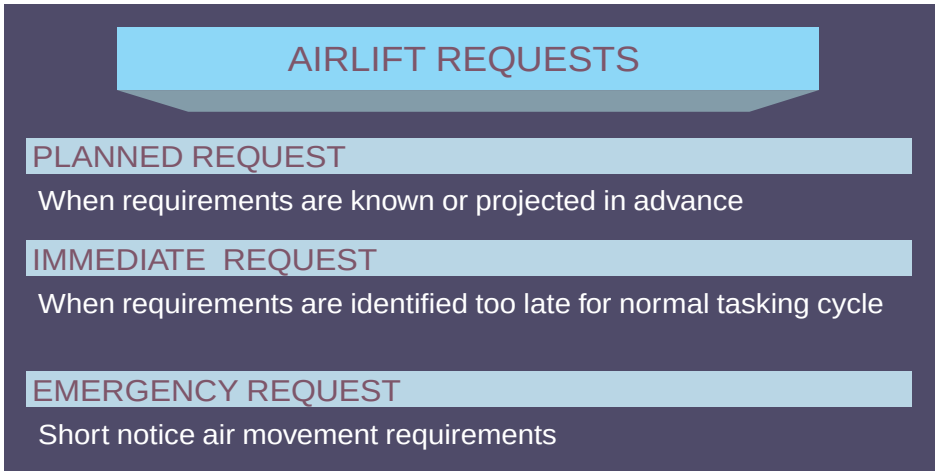

Figure III-1. Airlift Requests

5. Validation

Validation is the assessment of the feasibility and value of an airlift requirement. It is an integral part of the request and approval processes. It is also a distinct function of the validating authorities' responsibilities established at appropriate echelons of command. Airlift requesters validate their requirement by assessing its **operational necessity**, its **unsuitability for surface movement**, and its **approximate place in the priority system**. Validating authorities perform much the same function, though from broader perspectives of responsibility and information. **Approval of an airlift request implies that it was validated by the approving authority or appropriate validator**, who may be the same individual. The validation process should include ensuring that cargo and passengers validated for movement are ready for transport. The JMC normally should be the theater-level airlift validator.

6. Request Procedures

Service components establish their own organizations and procedures for requesting and validating planned and immediate airlift support. Time-proven Army, Air Force, Marine Corps, Navy, and SOF arrangements are described here to provide a baseline for joint force planning. The format which provides minimum essential information required to thoroughly plan an airlift mission is found in the **DD Form 1974, "Joint Tactical Airlift Request."** The DD Form 1974 information can be transmitted through the validation process via the US Message Text Form, Airlift Request Voice Template (AIRLIFTREQ).

7. The Army Component System

Army components usually control theater air movements through elements of the Army air-ground system (AAGS). The AAGS provides the command and staff interface between the Army and the Air Force. Comprised of stand-alone organizations and personnel integrated in various Army and Air Force command and control organizations, **the AAGS's many responsibilities include the request and control of theater airlift movements**. The workings of this system are described best in the responsibilities of its parts.

a. **Battlefield Coordination Element (BCE). BCEs will be located within the AFCC's AOC** (or in the JAOC if a JFACC is designated) **and consist of intelligence and operations personnel organized into airlift, air defense, fire support, and airspace control elements**. Overall, the BCE monitors and interprets the land battle situation and provides the necessary interface for the exchange of current intelligence and operational data. The airlift section coordinates airlift support for theater Army components, while the other sections coordinate fire and close air support for theater airlift missions, as appropriate.

b. **Tactical Operations Centers (TOCs). TOCs**, which are found in Army units down to maneuver battalions, **include TALOs and other individuals with theater airlift responsibilities**. Operations staff officers interface with Air Force TACPs to plan and coordinate air support. They also validate and prioritize theater airlift requests for their unit commanders.

c. **Ground Liaison Officers (GLOs).** Units may assign GLOs to the JAOC and theater airlift WOCs. In those positions, they **monitor and report on the current**

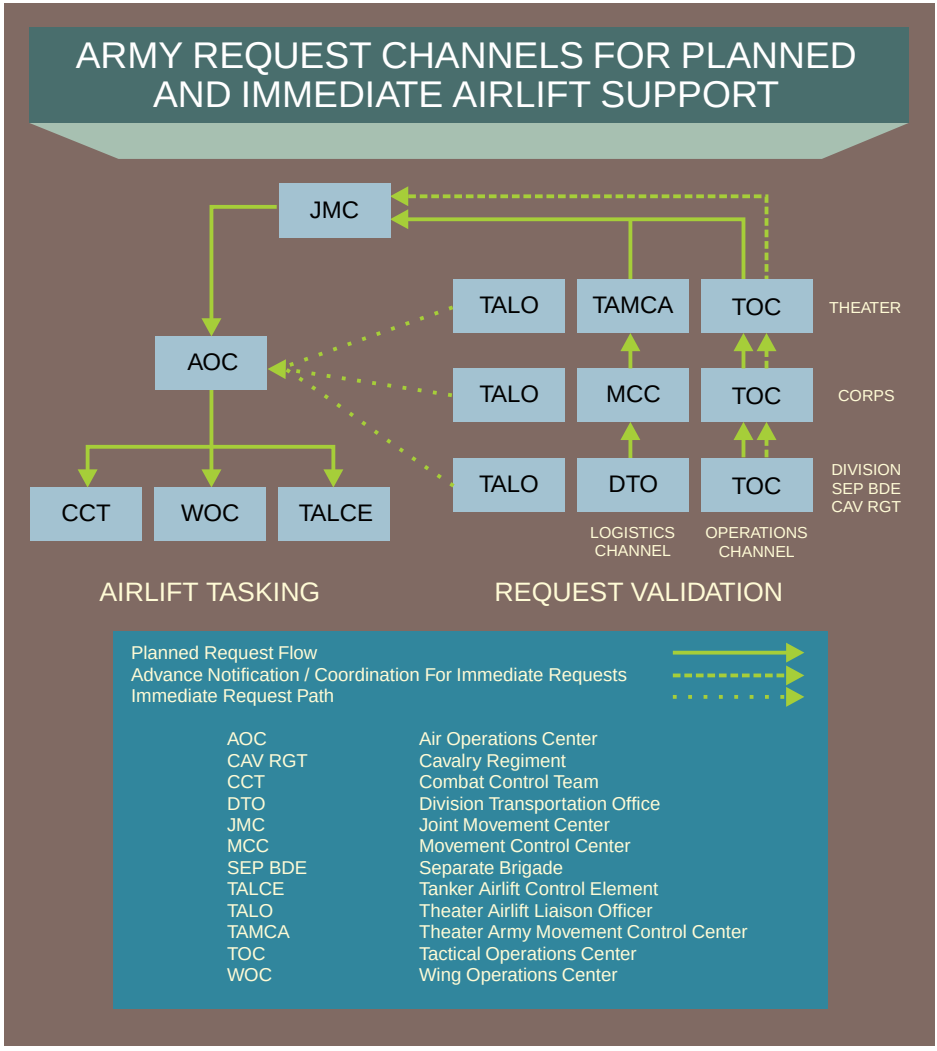

Figure III-2. Army Request Channels for Planned and Immediate Airlift Support

airlift situation to their parent units. They also advise the Air Force mission commanders and staffs on Army component air movement requirements, priorities, and other matters affecting the airlift situation. **GLOs assigned to the JAOC report through the BCE.** They are also the principal points of contact between the Air Force TALCEs and Army arrival/departure airfield control groups (A/DACGs) for controlling Army theater airlift movements.

d. **Arrival/Departure Airfield Control Groups (A/DACGs). Army A/DACGs coordinate and control the movement of Army component personnel and materiel through airlift terminals**. Comprised mainly of personnel and resources from the moving units, they are provisional units, task-organized to reflect the type of move and degree of support available at the terminal. **The A/DACG is the moving unit's point of contact with local Air**

Force base and TALCE commanders and personnel. When units from more than one component will transit a terminal simultaneously, the JFC should direct one component to provide the A/DACG. This will normally be the component with the largest movement requirement, and augmented, as necessary, by the other components. As the theater matures or when airlift mission requirements increase, **an air terminal movement control team (ATMCT) should be phased in** to replace the arrival airfield control group (AACG) to execute port clearance missions. Normally, this transition occurs when the airfield is designated an aerial port of debarkation (APOD) for the theater.

e. **Air Terminal Movement Control Teams. ATMCTs assist the Theater Army Movement Control Agency (TAMCA) and movement control center (MCC) in moving Army component personnel and materiel through large air terminals.** They are not organic to TAMCA or the MCC. ATMCTs have organic supply, replacement, processing, medical, transportation, and communications personnel. **Their responsibilities supplement those of A/DACGs** and, depending upon workload, the presence of an ATMCT may reduce or eliminate the need for an A/DACG at a given terminal.

f. **Army Long-Range Surveillance Teams (LRSTs). LRSTs can support theater airlift by conducting reconnaissance and surveillance operations of named areas of interest around terminal areas.** LRSTs, which make up a long-range surveillance unit, are organic to each Army division. Typically, one to six LRSTs support an airborne or air assault operation. If required, LRSTs can also mark drop zones and landing zones and direct fire support for theater airlift operations.

g. **Drop Zone Support Teams (DZSTs). DZSTs provide Army units with limited organic capabilities to support airdrop operations**. In the absence of or in conjunction with an Air Force CCT, DZSTs direct airdrop operations on DZs and consist of at least two personnel, including an airborne jumpmaster- or pathfinder-qualified leader. They can support airdrops (up to three aircraft) of personnel, equipment, and container delivery system (CDS) bundles. Their responsibilities include (1) evaluating DZs, (2) evaluating ground hazards, and (3) ensuring the suitability and recoverability of air-dropped personnel and material. In the absence of a CCT or DZST, TALOs are qualified to direct airdrop operations.

h. **Tactical Aviation Control Teams (TACTs).** Composed of air traffic control or pathfinder-qualified personnel, **TACTs locate**, **identify**, **and establish DZs**, **LZs**, **and EZs**. They install and operate navigational aids and communications around the terminal, control air traffic in this vicinity, and, to a limited degree, gather and transmit weather information.

8. The Marine Corps Component System

Marine Corps components usually control requests for theater air movements through coordinated actions by the **component movement control center**, **the command element's force movement control center (FMCC)** of the Marine air-ground task force (MAGTF), and the **Air Force TACS**. The process is initiated when the MAGTF FMCC transmits an airlift request to the JMC for validation and the JAOC for information. When airlift is approved, the MAGTF logistics movement control center organizes combat service support (CSS) units to support the move. See Figure III-3.

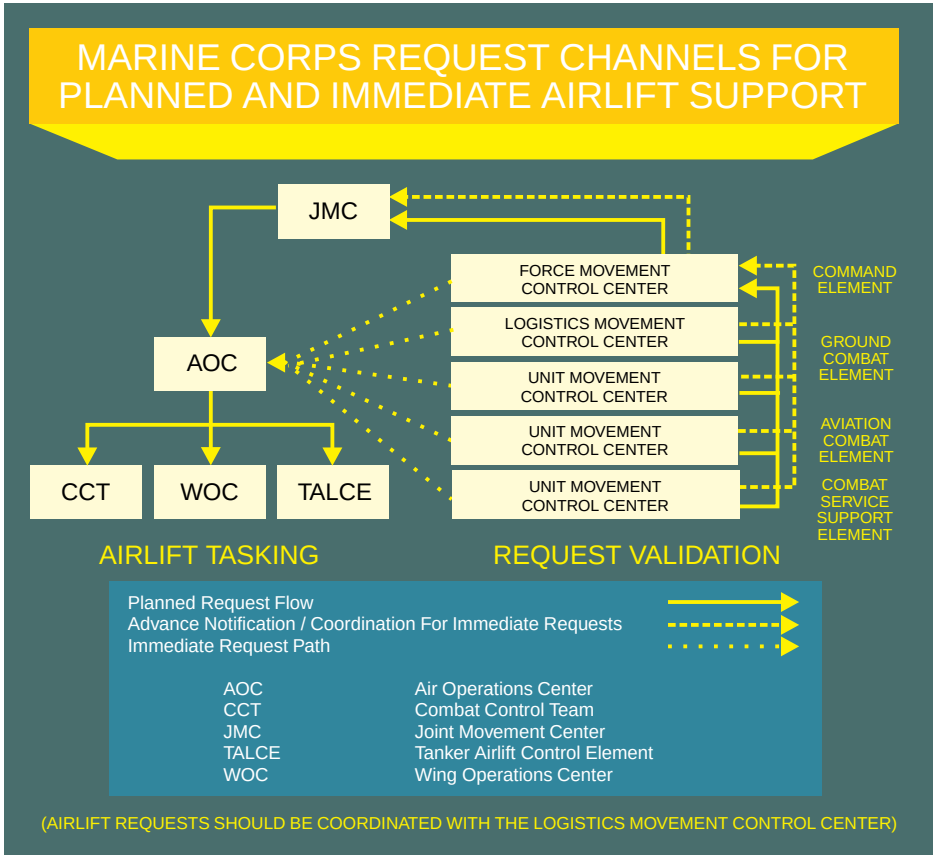

Figure III-3. Marine Corps Request Channels for Planned and Immediate Airlift Support

a. **The Arrival/Departure Airfield Control Group.** Marine A/DACGs are organized and tasked in much the same way as Army A/DACGs. **They draw most of their personnel and resources from the force service support group (FSSG).** As required, the FSSG provides **traffic management**, **MHE, communications, maintenance**, **and security support personnel and resources to the A/DACG**. Additional units, civilian agencies, or contractor support may fall under the control of the A/DACG. Depending on the MAGTF mission, the A/DACG may follow the rear elements of the transported force to reinforce the combat service support element (CSSE) at the arrival airfield.

b. **Concept of Operations.** The **MAGTF embarkation officer coordinates the planning and preparation** of MAGTF elements for air movement. The A/DACG provides the CSS services necessary to cycle a unit through an airfield. These control groups are task-organized, using personnel and equipment that normally do not accompany the deploying MAGTF to the destination airfield. If pre-positioning of the A/DACG is not practical, the A/DACG should move to the arrival airfield with the lead elements of the transported unit. The A/DACG coordinates with the TALCE and the MAGTF embarkation officer as necessary to ensure smooth operations.

9. The Air Force Component System

Air Force components normally control theater air movements of their own forces, through the same elements of the TACS that control the theater airlift forces themselves. Consequently, the logistic functions of those elements have been described, along with their operational functions, in Figure III-4 and in Chapter II, "Command and Control of Theater Airlift Forces."

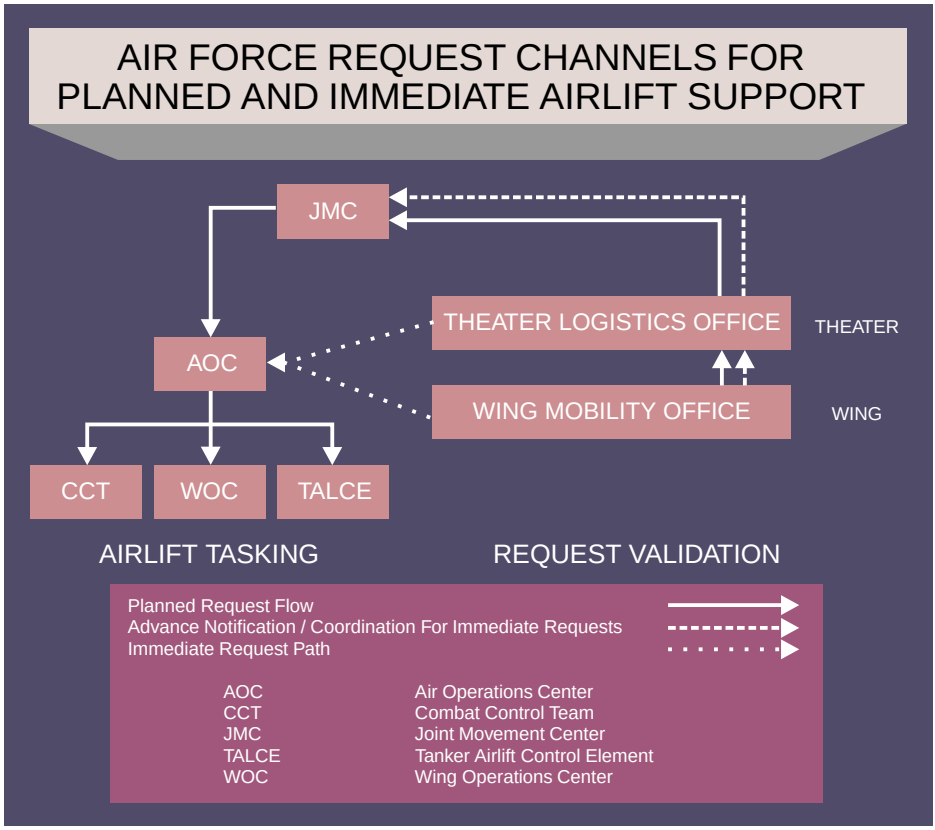

Figure III-4. Air Force Request Channels for Planned and Immediate Airlift Support

10. The Navy Component System

The logistics officer (N4) on the staff of the officer in tactical command normally directs the coordination of airlift requirements. The N4 establishes an airlift validation chain down to shore naval support activities. The N4 sets up communication links with the JMC and the JAOC. See Figure III-5.

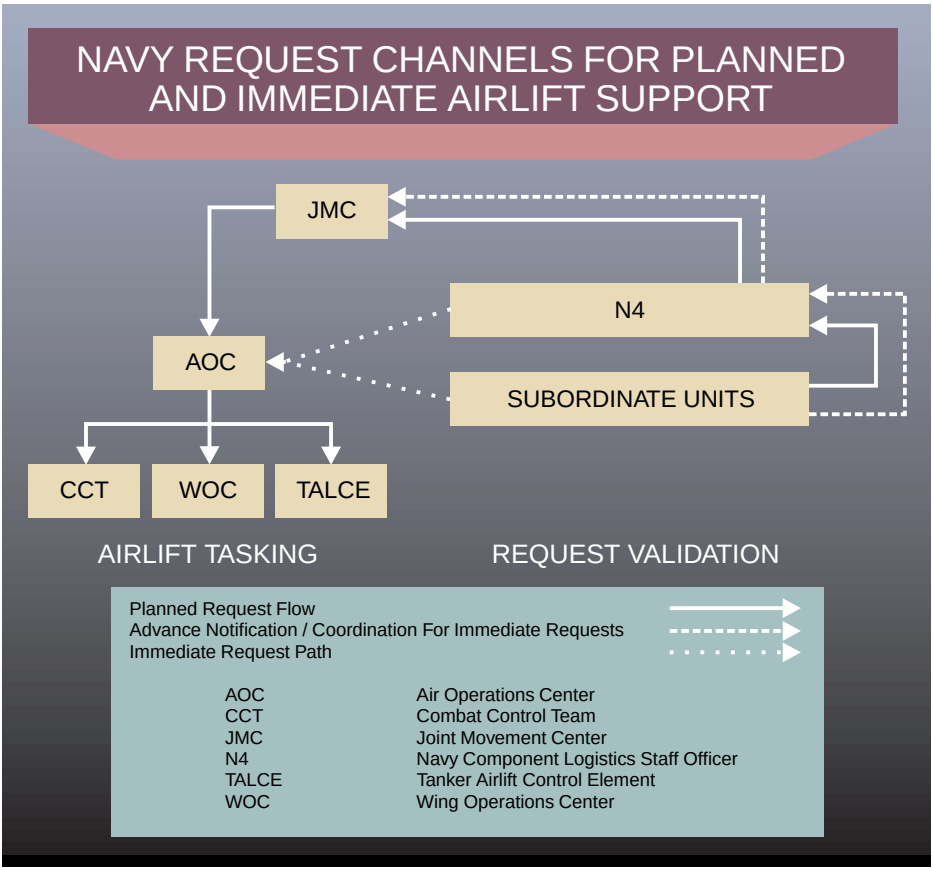

Figure III-5. Navy Request Channels and for Planned and Immediate Theater Airlift Support

11. The Special Operations Forces Component System

The special operations component logistics officer (SOJ4) on the staff of the SOF commander normally directs the coordination of airlift requirements. The SOJ4 establishes a system to validate common-user airlift requests from SOF units. The nature of the system depends on the composition and mission of the assigned forces. The SOJ4 also establishes communication links with the JMC and the JAOC. The **special operations liaison element (SOLE)** is normally located at the JAOC (or AOC) and assists in coordinating SOF requirements. Although the SOLE works for the SOF commander, they can assist and expedite requests for airlift support to SOF units. See Figure III-6.

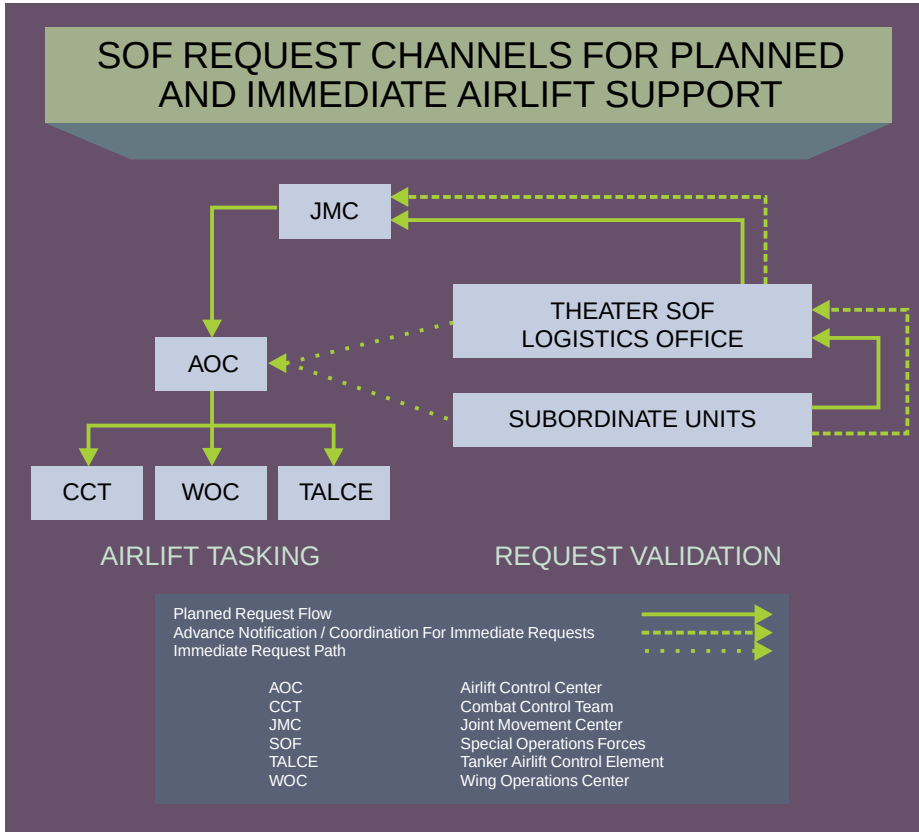

Figure III-6. SOF Request Channels for Planned and Immediate Theater Airlift Support

12. Control

Service and functional components are responsible for controlling their theater airlift movements. This responsibility includes performing or arranging to (1) bring units and materiel to departure terminals, (2) prepare those resources for air movement, (3) provide support services (meals, medical, billeting, and other appropriate services) to transient and arriving units, (4) receive and transport units and materiel from arrival terminals, and (5) prepare all manifests, movement documents, and reports related to the actual movement. **The purpose of these actions is to move component resources expeditiously**, with minimum expenditure of theater airlift resources and minimum exposure to hostile actions.

a. **Principles. Consider these control principles when planning for theater airlift movements:** (1) Minimize movement congestion and vulnerability by **reducing the time units and materiel spend en masse at forward terminals**. (2) Maximize the productivity and survivability of the airlift fleet by **minimizing aircraft ground times at forward locations**. (3) Minimize sortie requirements by **repackaging all materiel for air shipment; ensuring that combat personnel travel with their maximum authorized individual loads of rations, ammunition, or other personal equipment; and splitting units into air-essential and surface movement echelons** (whenever possible). (4) **Ensure that personnel are adequately fed, rested, and protected at en route stops**. (5) **Deploy the personnel and communications equipment necessary** to track and report on all air movements.

b. **Command and Control. Responsibility for controlling movements does not equate to command authority over airlift forces. Theater airlift forces are a common-user asset and should remain under centralized, theater-level control. This normally will be accomplished through the AFCC. If a JFACC is designated, then control of theater airlift assets should be exercised by the JFACC through the AFCC.** The operations of that organization should reflect the guidance and priorities of the JFC and its own doctrine and broader responsibilities in addition to the immediate requirements of the user. The responsibilities of the various component elements assigned theater air movement control responsibilities reflect this divergence of command and control.

CHAPTER IV
PLANNING THEATER AIRLIFT OPERATIONS

"In a normal theater of operations such as Europe, one relies on the five means of transportation in priority—rail, road, pipeline, inland waterways, and finally air. But here, because of VC (Viet Cong) interdiction of the surface means of transportation, we rely on them in reverse order—air first. . ."

General Frank A. Osmanski
Chief of Logistics, MACV

1. General

Theater airlift operations require extensive planning, preparation, and coordination. Planning considerations, studies, and estimates addressed in this chapter may apply in part or in their entirety to any theater air movement operation.

2. Command Responsibilities

a. **Command responsibilities** include **planning**, developing **intelligence**, **assembling participating forces**, accomplishing **training**, and establishing **security** measures. From the time an operation is announced until it ends, **participating echelons should coordinate and confer continuously**. Decisions on the phases of an operation form the basis to complete planning and preparation efforts. Overall planning considerations are listed in Figure IV-1.

b. **Direct liaison and coordination** between the logistic support agencies of the participating components and other supporting forces **is essential** and should occur during the preliminary planning stages. Joint planning culminates in publication of an **air movement plan**.

c. The **time available to plan and prepare an operation** is directly related to the tempo of the overall operation. Planning time is also influenced by the state of readiness of the forces to be employed. **By using jointly approved operating procedures, staffs can rapidly develop and execute plans for specific operations.** The normal planning sequence is shown in Figure IV-2.

Successful theater airlift operations in support of joint and combined forces require extensive planning, preparation, and coordination.

----------GENERAL----------

1. The mission.
2. Operational concept.
3. Rules of engagement.
4. Both en route and arrival intelligence information available and additional information required for planning, including aerial reconnaissance.
5. Tasked organization and number of troops.
6. Selection and approval of specific airfields, drop, landing, and extraction zones and approaches.
7. Time for initiation of air movement based on the tactical plan, meteorological forecasts, and other pertinent factors.
8. Review of the allocation of aircraft by number, type, and allowable cargo load for each type, to include abort replacement aircraft and waivers, if applicable.
9. Composition and priorities of serials and designation of departure airfields and drop, landing, and extraction zones.
10. Air Force combat control team (CCT) and long-range surveillance teams (LRSTs), sometimes called joint airborne advance party (JAAP), method and time of entry into objective areas.
11. Details necessary for preparation of the air movement table.
12. Plans for tactical air support, and deception and diversionary measures.
13. Special security measures.
14. Procedures for cancellation, postponement, recall, or change to alternate plans.
15. Exchange of liaison personnel.
16. Joint training, rehearsal, and briefing plans.
17. Drop airspeeds, altitudes, and briefing plans.
18. Both active and passive defense measures.
19. Communications-electronics plans to include en route communications, airborne command post, standardization of signals, signal operation instructions, standing signal instructions, and joint communications operations instructions.
20. Coordination of joint airspace control requirements.
21. Provisions for resupply and evacuation by air, to include the handling and control of all classes of supply.
22. Instructions for linkup or withdrawal.
23. Plans for engineer work required to improve existing, or to construct additional, airlanding facilities.
24. Provisions for medical support.
25. Contingency plans should aircraft be downed, forced to land en route, or diverted from its planned destination.

Figure IV-1. Joint Planning Considerations

----------DEPARTURE AND STAGING AREA----------

1. Arrival time of units.
2. Loading plan and provisions for special loading equipment and facilities.
3. Ground traffic regulation and control.
4. Coordination facilities (airlift control elements and departure airfield control groups).
5. Bump plan.
6. Station times and joint briefing plans.
7. Dispersal and parking plans.
8. Provisions for emergency resupply.
9. Provisions for air defense.
10. Security plans.
11. Provisions for medical support.
12. Bivouac areas to include minimum logistical support.
13. Provisions for nuclear, biological, and chemical (NBC) defense.
14. Provisions for Crash/Fire/Rescue.

----------OBJECTIVE AREA----------

1. Fire support plans, close air support and joint suppression of enemy air defense (J-SEAD).
2. Seizure and clearing of landing areas.
3. Installation of communications-electronics and en route communications to sustain airlift and provide ground communications for follow-up operations.
4. Air and ground traffic regulation and control.
5. Construction, rehabilitation, and maintenance of landing zones.
6. Procedures for air terminal operations.
7. Movement of troops and equipment from landing to assembly areas.
8. Provisions for air defense.
9. Medical support and evacuation of patients.
10. Responsibilities of each component for logistical support, to include the organization to handle resupply and supply build-up operations.
11. Civil-military plans.
12. Alternate plans that permit deviations from the primary plan or new courses of action to be implemented.
13. Tactical air reconnaissance.
14. Procedures for evasion and escape.
15. Evacuation of prisoners of war, captured material, and civilian internees.
16. Graves registration responsibilities.
17. Morale, postal, recreational, and chaplain support.
18. Provisions for NBC defense and smoke support.
19. Provisions for Crash/Fire/Rescue.

Figure IV-1. Joint Planning Considerations (continued)

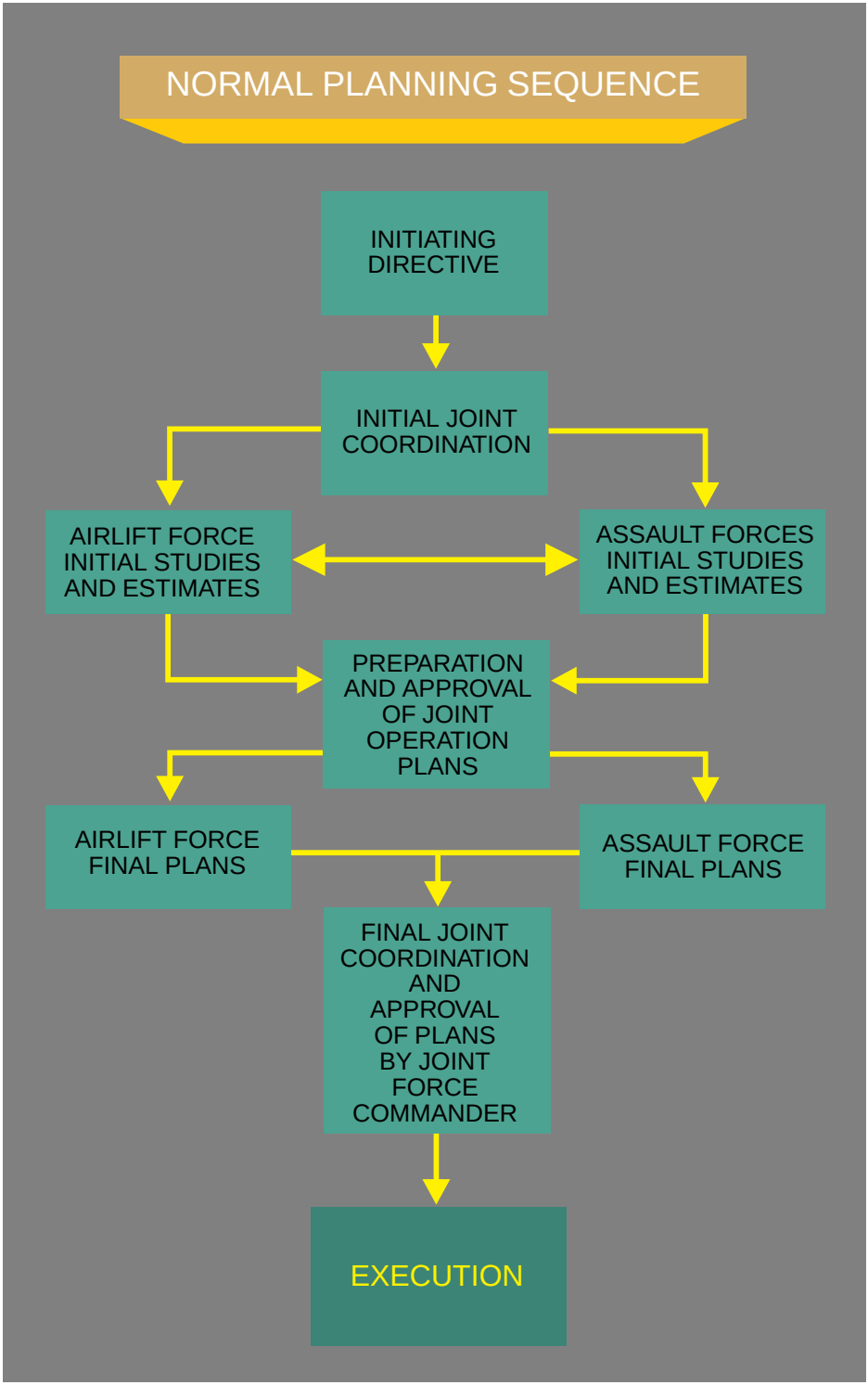

Figure IV-2. Normal Planning Sequence

3. Preliminary Planning

Studies, concepts, and operation plans for the employment of forces are prepared to cover possible missions and locations. Detailed planning for the conduct of specific operations is performed by the participating component commands. Subordinate commands should make maximum use of existing plans.

4. Plan Development

a. A **directive for air movement operations** requires component commands to immediately begin applicable **studies** and develop **estimates** as shown in Figure IV-3. This initial planning assembles pertinent data for joint planning and decisions.

----------AIR MOVEMENT OPERATIONS----------

1. Analysis of mission, available intelligence, and requirement for additional intelligence.
2. Current enemy order of battle.
3. General ground tactical plan for initial assault, subsequent operations, and linkup or withdrawal, as applicable.
4. Task organization, strength, departure order priority, and requirements for additional units and additional combat support.
5. SOF units may be called upon to provide early infiltration into a theater of operation, or in the case of psychological operations (PSYOP) units, use of airborne leaflet dissemination to target audiences.
6. Recommended time for initiating the operation.
7. Meteorological studies, including long-range forecasts.
8. LRST employment; CCT employment if required.
9. Detailed analysis of possible airfields, DZ, LZ, and EZ to include information on the enemy and civilian population, type of soil, nature of terrain, elevation, clear zones, best axes of approach, and an estimate of the required engineer construction effort. Landing zone selection is a user function. The airlift force analyzes those LZs for suitability. The airlift force may recommend alternate LZs.
10. Airlift units available for all phases, to include air terminal and aeromedical evacuation operations, and requirements for casualty staging.
11. Organization and control of logistic support and buildup.
12. Available facilities at the onload locations, to include possible departure airfields, staging areas, logistic and communications-electronics support, and materials handling equipment (MHE).
13. Estimate of maintenance and supply support requirements, to include MHE in the objective area.
14. General air movement plans to and from the objective area.
15. Airspace Control Authority (ACA) requirements.
16. Movement data for all supplies, personnel, and equipment to be air-transported and divided into forces for airlanding, airdrop, and LAPES.
17. Type and number of aircraft sorties required for the forces or follow-up forces and load plans in each phase.
18. Integration of organic and/or attached Army aviation means and facilities into the overall tactical plan.
19. ACL for each type of aircraft under pertinent flight profiles.
20. Requirements for POL, navigational aids, medical support, combat rescue, combat air support, air defense, training and rehearsal, NBC defense, and follow-on aerial resupply.

Figure IV-3. Initial Studies and Estimates

b. **Air movement planning** is developed from the objective area back to the existing disposition of forces (backward planning). **The sequence** (shown in Figure IV-4) **is as follows:**

5. Landing Plan

a. **The force commander's landing plan links air movement to the overall tactical plan and is the basis for joint development**

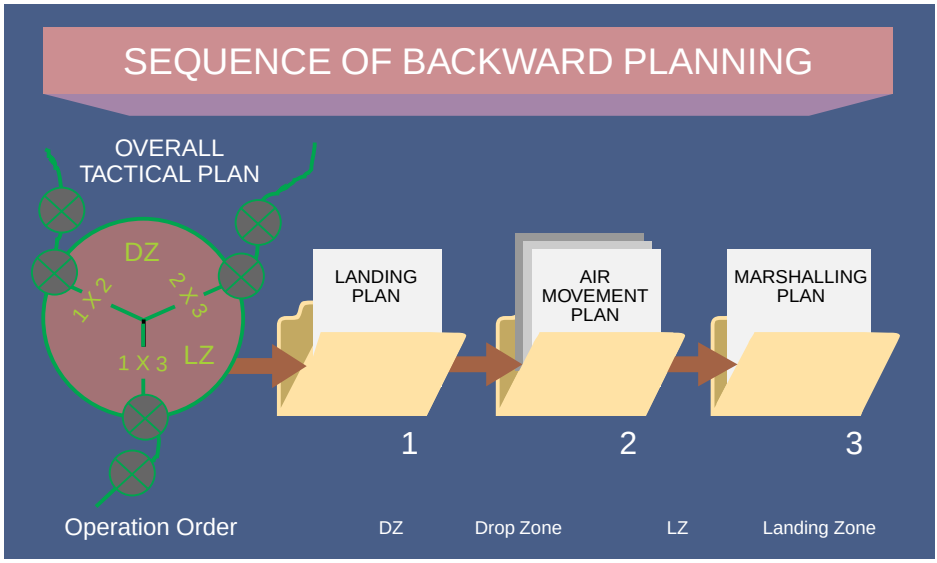

Figure IV-4. Sequence of Backward Planning

- Overall tactical plan.
- Landing plan.
- Air movement plan.
- Marshalling plan.

c. **The overall tactical plan for an operation is the basis for all other planning.** It covers the **concept of operations** and the **scheme of maneuver**. It includes a determination of strength and composition of the forces required to accomplish assigned tasks and a supporting logistics plan. Until the overall tactical plan is complete, other planning cannot be finalized.

of the air movement plan. To develop the landing plan, planners should have the following information:

- Overall commander's priorities.
- Subordinate unit tactical plan.
- Subordinate unit landing plan.

b. **The landing plan contains five elements of information:** (1) the **sequence** of delivery (starting with time over target (TOT) through offload and departure); (2) the **method** of delivery; (3) the **time** of delivery; (4) the **place** of delivery of troops, equipment, and supplies into the objective area; (5) and the **assembly plan**. **The**

nature and location of the airfield, DZ, LZ, and EZ are basic considerations in preparing the landing plan. Landing areas should be large enough to accommodate initial forces. Battalion-sized and larger

- **Easily identified** from the air.
- **Straight-line, minimum threat approach** to the objective area permitting proper aircraft alignment.

Mass aerial delivery of forces requires large, unobstructed drop zone areas from which the forces can effect a rapid assembly and reorganization.

areas permit rapid assembly and reorganization. However, using smaller company-sized landing areas would avoid massing of forces and presents a less lucrative target. **The following are desirable characteristics of an airfield, DZ, LZ, or EZ:**

- **Near to or,** if the enemy situation permits, **directly on top of the objective**.
- **Free of nuclear, biological, and chemical (NBC) contamination and natural obstacles.**
- **Avoids enemy air defenses and strong ground forces.**
- **Near dominating terrain**, good road networks, and terrain favorable for defense against attack.
- **Sufficient in size** for rapid delivery of the force or, if airdropped, to allow delivery in a single pass.
- **Adequate cover and concealment** for troops to assemble and reorganize near the landing area.
- **Minimum construction required** to maintain or upgrade an airfield, LZ, or EZ.
- **Outside the range** of enemy suppressive fires.

6. Air Movement Plan

a. **The air movement plan covers the phase of the operation from the time units begin loading aircraft until they arrive at the objective.** The air movement plan lists takeoff time, flight routes, and order of flight and arrival times at DZs and LZs. It facilitates timely delivery of units to the objective area in accordance with the landing plan. The essential elements of the air movement plan are shown in Figure IV-5.

b. **Air movement plans are coordinated with elements of plans.** The combat control personnel, communications equipment, and navigational aids required for assault, follow-on, resupply, and withdrawal operations are established on the airfield, LZ, DZ, or EZ.

c. **The airspace control authority (ACA) is responsible for airspace control during any air movement.** The distances involved and the duration of an operation may require establishing **special air traffic control facilities** or **combat control teams** to extend detailed control into the objective area. The AFCC provides for the timely delivery of the assault force and equipment to selected airfield, LZs, DZs, and EZs.

d. **Ground commanders in airlift aircraft may communicate with the chain of command over the Army secure en route communications package (SECOMP).** Normally, the airlift mission commander and airborne force commander are in the same aircraft. The senior ground commander can advise embarked ground commanders of changes in the ground tactical situation or to the air movement plan. Communications installed on either the **ABCCC** or the **joint airborne communications center/command post** may be used to relay information from the objective area. If an aircraft emergency should occur, use of dedicated Army SECOMP will cease at the discretion of the aircraft commander.

e. The Air Force component area of authority around a DZ, LZ, or EZ includes sufficient terrain and airspace to permit safe and efficient air traffic control. **Within the airspace control zone** (normally 3 to 5 miles in diameter), **all aircraft flights should be coordinated with the Air Force CCT and the ACA.** The AFCC coordinates with the assault force commander to select the TOT and the approach to the airfield, LZ, DZ, or EZ.

f. **The direction of approach over a DZ is a basic consideration** in planning the positioning of heavy drop loads, the expeditious assembly of personnel after landing, and the launching of the ground operation. **Complete coordination is necessary before the direction of approach is established or changed.** For any air movement operation, alternate airfields, LZ, DZ, or EZ and corresponding approaches should be established.

g. **Each airfield, DZ, LZ, or EZ should have alternate ground tactical and air movement plans to compensate for:**

- Drastic changes in the situation.
- Faulty intelligence.
- Adverse weather in the departure area, en route, or in the objective area.
- Failure of the joint force to accomplish any part of its mission.
- Employment of NBC weapons by enemy forces or nuclear weapons by friendly forces.
- Failure of communications.
- Delays en route.

- Limited logistic support.
- Significant combat losses.

h. **Special provisions** are made to send out the order to execute an alternate plan and to provide necessary logistic support.

i. **The air movement table forms the principal part of the air movement plan.** It contains the essential elements of the air movement plan, as listed in Figure IV-5.

j. **Countermeasures** that may be used to reduce the enemy's interference with air movement **include:**

- Dispersion of aircraft.
- Flying at high and low altitudes.
- Employment of electronic countermeasures.
- Diversionary measures.
- Operations at night and during periods of reduced visibility.
- Employing joint suppression of enemy air defenses (J-SEAD) measures.

k. **The air deployment of forces may require an intermediate staging base (ISB)** between origin and the objective area. The assault force, or parts of it, pass through the ISB for aircraft regrouping, troop redistribution, equipment inspection, training, aircraft refueling, additional preparation, and rest. **The forces may arrive at the ISB in one of the following transportation modes:**

- Combat loaded in airlift aircraft.
- Administratively loaded in airlift aircraft.
- Administratively moved by motor, rail, or water transport.

l. **Forces usually remain at the ISB for only a short time.** Planning considerations may require that rigged loads remain on mission aircraft.

m. **The ISB support element gives minimum essential support** to ground and airlift forces. The ISB organization should be able to assemble rapidly for air transportation to the selected staging base before starting an air movement operation.

1. Departure airfield for each serial.
2. Number of aircraft for each serial.
3. Chalk numbers for each aircraft, serial, and departure airfield.
4. Unit identity of the airlift element.
5. Name and rank of each USAF serial commander.
6. Employment method for each aircraft airlanding, personnel drop, heavy equipment drop (HE), CDS, and extraction.
7. Ground unit identity.
8. Name and rank of each assault force commander.
9. Load times.
10. Station times.
11. Takeoff times.
12. Designated primary and alternate LZs or DZs for each serial.
13. Time over target/arrival for the lead aircraft.
14. Remarks (includes special instructions, key equipment, and location of key members of the chain of command).

Figure IV-5. Essential Elements of the Air Movement Plan

n. To control the intermediate staging of forces, **component commanders establish a joint coordinating element at the ISB** consisting of a TALCE, ATMCT, and A/DACG. A typical ISB organization is structured on the premise that the supported force should perform much of its own processing.

o. When practical, **organic support elements of the force precede the combat elements into the ISB**. Support elements use the additional time to complete plans with ISB personnel for organizing and establishing support activities. **The ISB commander provides support functions which are illustrated in Figure IV-6.**

p. **The mission of the ISB is completed when the force has departed.** The ISB personnel may then act as an element of the forward supply base, responsible for continuing logistic support of forces transiting the ISB en route to the objective area.

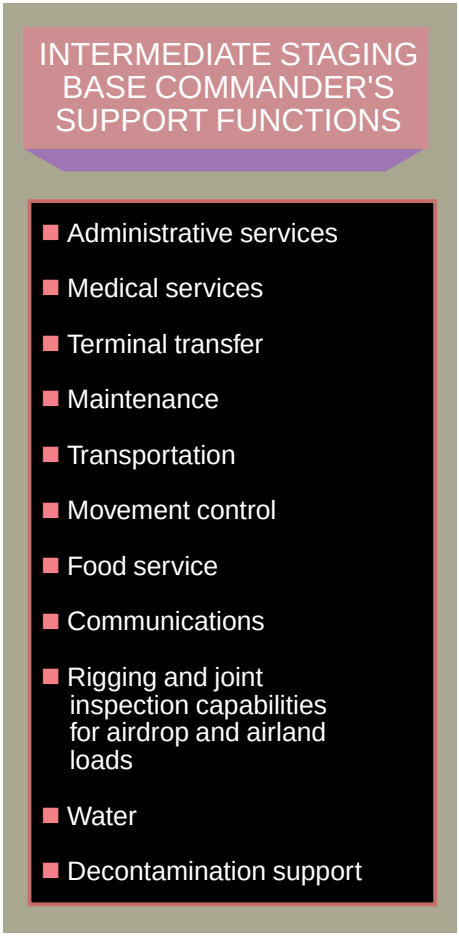

Figure IV-6. ISB Commander Support Functions

7. Intelligence Planning

a. **Intelligence organizations** provide enemy composition, vulnerabilities, capabilities, intentions, and probable courses of action in support of air movement operations. As a minimum, **intelligence estimates should include:**

- **Enemy capabilities** to detect and disrupt the airlift operation in any phase. Consider enemy ground forces, NBC capabilities, and air defense in the objective area and the enemy's potential to attain, maintain, or regain air superiority.
- The **availability of indigenous resources** to support a particular operation or projected operations.
- The **degree of assistance or resistance** expected from political or paramilitary groups or organizations.
- The **attitude** of the civilian population in the objective area.
- Based on the JFC and component's requirements, **detailed terrain analyses** with special emphasis on areas suitable for DZs, LZs, and EZs; areas for construction of airstrips; and areas for positioning the logistic support base.

- Determine **mapping, charting, and geodesy requirements**, based upon the areas of operations for airlift units.

b. **An intelligence collection plan** for an objective area **should be developed and implemented early** in the initial planning stage of the air movement operation. The intelligence collection plan should include **collection of information and intelligence from all available sources**, including counterintelligence to reduce the risk of surprise and deception. **Intelligence organizations should identify requirements and essential elements of information** during initial planning and continually update those requirements, including those submitted by subordinate units, as required by changing plans and circumstances. **Large-scale annotated imagery** is desirable for locating anti-airborne obstacles and defenses.

c. Subordinate units should identify **map and imagery requirements** early in the planning.

8. Operations Security and Counterintelligence Planning

All information pertaining to impending operations should be classified appropriately and controlled on a strict need-to-know basis until the air movement phase is completed. When feasible, ground forces and airlift aircraft should be assembled at dispersed airfields to reduce their signature. Forces should move to dispersal areas near air facilities quickly and as late as possible. Ground forces should also make all possible preparations for loading before they arrive at the loading site and sequence movement to these sites so that personnel arrive soon after equipment and supplies have been loaded on the aircraft. **Appropriate deception or misinformation plans**, developed early in the planning stages, **may help conceal or divert attention of the aircraft and troop movements**. However, these plans should not jeopardize alternate plans or other operations within the area.

9. Command, Control, Communications, and Computers (C4) Systems Planning

Communication plans should be developed and coordinated by a joint communications staff to integrate the communications facilities of joint force components. **These plans should include** en route communications, call words or call signs, frequencies, communications equipment and supplies to be airlanded or airdropped, and the sequence of their delivery, to include equipment to replace losses, and code words for significant events. **The staff can recommend which component should have responsibility for the following functions:**

a. **Communications-electronics during air movement.**

b. The **communications net for early operations** in the objective area.

c. A **net between the departure airfield and LZ** (or arrival airfield) for airland operations.

d. **Transition** from assault net operations to normal communications nets.

e. **Communications from the objective area** through the C4 systems of geographic combatant commands and other headquarters as required; **communications from the joint force headquarters to and between component commands**; and from Department of State or other agencies in the objective area.

f. Formulation, publication, and distribution of the **communications-electronics operating instructions** and **joint communications electronics operating instructions (JCEOI)**.

g. **Relay-type communications** for disseminating intelligence or mission changes to the airborne force commanders while in flight to the objective area.

h. **Jamming operations** and coordination to prevent interference with friendly command and control.

10. Logistics Planning

JFC and Service component commander responsibilities for the logistic support of assigned and attached forces are described in Joint Pub 4-0, "Doctrine for Logistic Support of Joint Operations" and other 4-series joint publications. Described here are those considerations requiring emphasis in relation to airborne operations.

a. There are many **considerations that affect logistic planning in air movement operations**. They include:

- **Aircraft characteristics, capabilities, and allocations.**
- **Airfields**, to include capabilities and limitations, **and airland facilities available** in the departure and objective areas. Engineer effort and equipment requirements for new construction or necessary improvements to existing facilities.
- Number and location of **marshalling areas** and the composition of forces to be marshalled.
- **Joint inspection (JI) requirements** and sourcing for JI-qualified personnel.
- **Supplies, equipment, personnel, and materiel required** in the objective area and requirements for follow-up and routine supplies.
- Type and amount of prestocked, pre-positioned, and prerigged **combat support supplies**.
- Estimates of the **medical air evacuation** workload.
- **Anticipated host-nation support** and measures to obtain local labor, transportation, and materiel resources.
- Returning Air Force **pallets and tie-down equipment** after air delivery.
- Requirements for **retrograde movement** of repairable parts and equipment.
- **Mail distribution operations.**

b. **Initial combat requirements dictate the quantity and type of supplies and equipment that the forces carry.** These requirements are influenced by the handling capability of the units in the objective area, availability and carrying capacity of airlift aircraft, projected date of linkup or withdrawal, anticipated weather, and enemy capabilities. **Documentation of supplies** delivered to the airhead facilitates allocation and **shifting of priorities** to support planned or unexpected situations.

c. **Forces can be resupplied by either airland or aerial-delivered methods.** Follow-up supplies are prepared and delivered commensurate with the threat situation and the handling and transportation capabilities of the ground forces. **The supported commander is responsible** for recovery of aerial-delivered supplies and equipment and for the return of critical airdrop rigging equipment, specifically parachutes,

platforms, tie-down equipment, and air pallets. **The needs of the force in the objective area should be the principal consideration.** The objective of delivery operations is to deliver supplies as close as possible to the using unit.

OVER THE "HUMP"

In the Pacific, United States Army Air Force and United States Navy transport aircraft maintained a supply service to forward bases, supporting the seaborne effort. The relative absence of good airfields in many of the Pacific islands led to a role for transport flying boats such as the Martin PB2M-I Mars, which had originally been developed as a maritime reconnaissance aircraft, but which suffered from insufficient armor protection and a limited defensive armament, and was put to work as a transport instead, redesign being considered unnecessary for its former role in view of the substantial number of Catalina and Mariner flying boats available to the USN. The maximum speed of just 210 mph was good for a transport of the day, regardless of type, and the Mars was a significant design in other ways as well. Four 2,200 hp Wright Double Cyclone radial engines gave a range of up to 4,100 miles. Following a first flight in late 1941, the first transport version became operational in December 1943, and one of these aircraft lifted a payload of 35,000 lbs over a distance of 1,200 miles before the end of the year. In January 1944, another Mars carried 20,500 lbs from California to Hawaii!

Before this, an American Volunteer Group had arrived in China during September 1941, and were at first officially part of the Chinese Nationalist forces under General Chiang Kai-Shek, fighting the Japanese invaders, although the members of the group, about a hundred or so pilots plus supporting personnel, were all former Navy, Marine and Army Air Force pilots, flying Curtiss P-40 Warhawk fighters, supplied by the United States to China. The commanding officer, Captain Claire L. Chennault, was also a Colonel in the Chinese Air Force! The Japanese advance through Southeast Asia in December 1941 cut the group off from its supply lines leaving its members with the alternatives of curtailing operations or being supplied by air. The one advantage available to Chennault was that the Americans were the only people with the resources available to make such an airlift a possibility at this stage of the war. The entry of Japan into the war had also brought the United States into the conflict, and the need for secrecy or disowning the volunteers' force was gone. The disadvantages were many, apart from the quantity of supplies needed, the transport aircraft would have to fly over a part of the Himalayas which rose to more than 16,000 feet, later known to the aircrews involved as the "hump", and sustain a regular and reliable operation in the face of difficult weather, indifferent base facilities, and the possibility of enemy air attack.

The airlift started, initially with Douglas C-47s flying over the "hump," and with each carrying about two-and-a-half tons of supplies, early in 1942. A network of bases had to be established in northeast India, with railways moving supplies forward to the bases from Calcutta. The operation would have been easier had the transport aircraft been able to take the most direct route to the American Volunteer Group base at Kunming, but the threat of attack from Japanese fighters based at Myitkyina forced them to take a route across the Himalayas and southeast Tibet. The squadrons employed on the airlift were

transferred to the new United States Air Force Air Transport Command in December 1942, while Chennault's group became part of the United States China Task Force in July 1942, with Chennault being promoted to the rank of Brigadier General in the USAAF. The airlift monthly total rose from 2,800 tons during February 1943, to 7,000 tons by December of that year, while it rose even further to 12,000 tons a month during early 1944. The increase in tonnage was helped by the substitution of Curtiss C-46 Commandos on the airlift, as well as a number of Douglas C-54 Skymaster four-engined transports and some Consolidated C-109s. There were the inevitable arguments between Chennault and the military commanders in the region, with the former wanting the bulk of the airlifted supplies to keep his force operational, while the then Commander-in-Chief of the India-Burma-China theatre, Lieutenant General Stilwell, insisted on a 50:50 split of supplies between air and ground forces. There was opposition from the Japanese, but on one of the rare occasions when they decided to do something about it, as in March 1944, when 18 bombers and 20 fighters went to raid Chennault's base, the P-40s shot down all but one of the Japanese aircraft.

It was in such demands placed upon transport aircraft during the war years, flying over the Himalayas and across the North Atlantic, that the reliability and acceptability of transport for arduous operations was proved.

SOURCE: David W. Wragg, *Airlift: A History of Military Air Transport,* Presidio Press, 1987.

11. Materiel Collection and Classification Planning

Because much abandoned or captured materiel may be reusable by friendly forces, **ground and air commanders should develop plans for their backhaul**, consistent with the urgency and length of the primary mission.

12. Planning for Enemy Prisoners of War

EPW collection points should be located near air terminal facilities to aid in air evacuation.

13. Medical Support Planning

A complete medical estimate is usually conducted for each phase of an operation. The respective Service component medical planners should conduct detailed medical supply planning and medical support operations. Plans should allow for probable losses of medical equipment and supplies during delivery into the objective area. **Estimates should be made for replacement items** to cover losses due to battle actions, evacuation of patients, and other causes. The evacuating medical activity usually provides litters, blankets, splints, and other medical items of equipment accompanying patients during evacuation. Additional information regarding aeromedical evacuation support can be found in Joint Pub 4-01.1, "JTTP for Airlift Support to Joint Operations," and Joint Pub 4-02.2, "JTTP for Patient Evacuation in Joint Operations."

14. Weather Planning

Weather planning for an airborne operation should include forecasts from departure through recovery of the airlift force, with special attention given to departure and objective area cloud bases,

percent of moon illumination, visibilities, and winds on the surface through drop altitude.

15. Marshalling Plan

The marshalling plan provides the administrative and logistic procedures by which units of the involved forces complete final preparations for combat, move to the departure airfields, and load aircraft. Specific procedures are discussed in Chapter V, "Marshalling."

16. Withdrawal or Restaging Plan

a. **The withdrawal or restaging of forces by air should be done in accordance with the general guidelines for redeployment and extraction airlift operations** described in Chapter I, "General Overview." Other specific considerations that may be important to the success of these operations include the local air superiority situation and the possible need for friendly deception. Such operations should mask these withdrawal movements for as long as possible. Clearly, **the likelihood of success will be increased by conducting these operations early enough to allow for comprehensive planning and organized execution**. Once the appropriate ground force commander orders an operation and establishes movement priorities, load plans, and departure points, **the AOC should control the movement**. TALCEs should be placed at the departure points, if possible.

b. **The ground force commander should provide trained loading teams at the departure points to assist airfield support units** in loading and securing equipment, with technical assistance and supervision from Air Force personnel. Specific withdrawal and equipment destruction procedures are contained in appropriate Service manuals.

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CHAPTER V
MARSHALLING

"Move upon the enemy in one mass on one line so that when brought to battle you shall outnumber him."

Napoleon

1. General

a. **Marshalling is the process of assembling units or moving them to temporary camps near embarkation points to complete preparation for combat or to prepare for loading.** It includes the preparations required to plan, document, and load equipment and personnel aboard aircraft.

b. **The marshalling area is usually located near departure camps and airfields** to conserve resources and reduce the opportunity for observation. When the number of departure airfields is limited or when requirements dictate dispersion, loading may be accomplished on a phased schedule.

c. **The Air Force component portion of the marshalling operation is developed during air movement planning** and consists of instructions regulating aircraft movement and the aircraft parking plan. These procedures are in the air movement annex to the operation order (OPORD).

2. Preparations

a. **Planning. The JFC staff coordinates with administrative and logistic agencies** for maximum support during marshalling. This support includes **transportation**, **communications**, and **housekeeping details** (campsite construction, operation, and maintenance; messing; and religion, recreation, and other morale services) and permits the unit to concentrate on preparation for the movement. **Support may also include local security personnel** to supplement normal Air Force security at the departure airfield. For details on air base ground defense, see Joint Pub 3-10.1, "JTTP for Base Defense."

b. **Logistics. The unit logistics officer prepares the marshalling plan.** The plan is an appendix to the service support annex of the OPORD or an annex to the administrative and logistics order of the airlifted force. It should contain procedures for cover and deception. **The marshalling plan includes procedures for moving units** from marshalling areas through the alert holding and call forward areas to the ready line. Finally, it includes methods for loading troops and equipment into individual aircraft.

c. **Selection of Marshalling Areas and Departure Airfields. The selection of marshalling areas and departure airfields is based on the air movement plan** and influenced by several common factors. There is no order of priority among these factors, but any one of them could become the basis for final selection. To avoid concentration of forces, **multiple marshalling areas and departure airfields should be selected**. Excessive dispersion, however, makes command and control more difficult and may diminish the effectiveness of supporting activities. **The factors affecting selection of marshalling areas and departure airfields are illustrated in Figure V-1.**

Figure V-1. Factors Affecting Selection of Marshalling Areas and Departure Fields

d. **Unit Preparation.** For security reasons, marshalling should be accomplished quickly. **To prepare for marshalling, deploying units:**

- Establish liaison with the departure airfield control group (DACG).
- Obtain equipment and supplies as early as possible.
- Issue prepackaged supplies and equipment to the airborne forces to expedite loading operations.
- Perform final preparation of vehicles and equipment.
- Ensure that adequate shoring and dunnage materials are readily available.
- Receive parachutes and other air items and prepare airdrop loads in coordination with the responsible airdrop support unit.

  •• The deploying unit is responsible for preparing and certifying aircraft load plans (appropriate Air Force officials verify and approve load plans), personnel, and equipment manifests (and annotating any hazardous materials by class), and submitting them through the DACG to the supporting airlift elements. En route messing is a deploying unit responsibility.

  •• Unit commanders or team chiefs plan and coordinate the use of available facilities and areas at departure airfields for command post, communications centers, briefing areas, and equipment and supply handling points. Ensure unit equipment, including individual clothing and equipment not required in the objective area, is packed in suitable containers and stored at the rear echelon or installation.

3. Dispersal Procedures

Dispersal techniques should be considered during marshalling. One technique involves moving personnel and

equipment to departure airfields where an airlift may be staged. Another technique is to fly airlift aircraft to onload bases where personnel and equipment are located. Personnel and equipment are subsequently airlifted to the originating departure airfields. **Any combination of these procedures may be used.**

4. Responsibilities

a. **Arrival and departure airfield operations are conducted by Air Force and the deploying component units.** The Air Force units, consisting of TALCE, MST, and mission support element (MSE) teams, are typically assigned to either composite or provisional organizations tailored to meet the specific task at hand. **These teams are responsible for marshalling the deploying unit and associated equipment for airlift.** The organization employed depends on the size of the unit being deployed and the number of aircraft involved.

b. **The A/DACG is the deploying Service component's counterpart** to the TALCE, MST, and MSE. This organization is sized to support the unit being deployed. Specific marshalling responsibilities are outlined in Figure V-2.

5. Execution

a. **The deploying unit, DACG, and TALCE work together to ensure the unit is ready for air movement** as quickly, orderly, and safely as possible. The deploying unit **assembles**, **prepares,** and **documents** its cargo and personnel for air movement. **Discrepancies are identified and corrected** prior to air movement. There are **four separate areas of activity** in departure airfield operations. Each activity takes place in a designated area and involves specific tasks. Figure V-3 shows the four separate areas of activity and outlines the major functions of each area.

A/DACG
- Coordinate with the TALCE, MST, or MSE and deploying unit.
- Ensure offload teams and required support teams are available.
- Accept responsibility for each planeload at the established release point from the TALCE.
- Release each load to the deploying unit.
- Provide fueling and minor maintenance for deploying unit vehicles.

Deploying Unit
- Appoint a plane team or troop commander for each mission aircraft carrying passengers. Coordinate with the A/DACG.
- Complete final preparation of vehicles, equipment, pallets, containers, and required documentation.
- Ensure all required shoring and dunnage are on hand.
- Assemble personnel and equipment into plane loads according to preplanned load plans.
- Provide safety equipment to loading crew members.
- Ensure personnel and equipment arrive at the alert holding area according to the established timetable.
- Correct any load or documentation discrepancies identified by the A/DACG or TALCE.
- Assist in loading and unloading aircraft as instructed by the TALCE load team chief.

Departure and Arrival Airfield Installation Commander
- Provide a marshalling area.
- Provide any logistical or administrative support as identified during the planning process.

Figure V-2. Marshalling Responsibilities

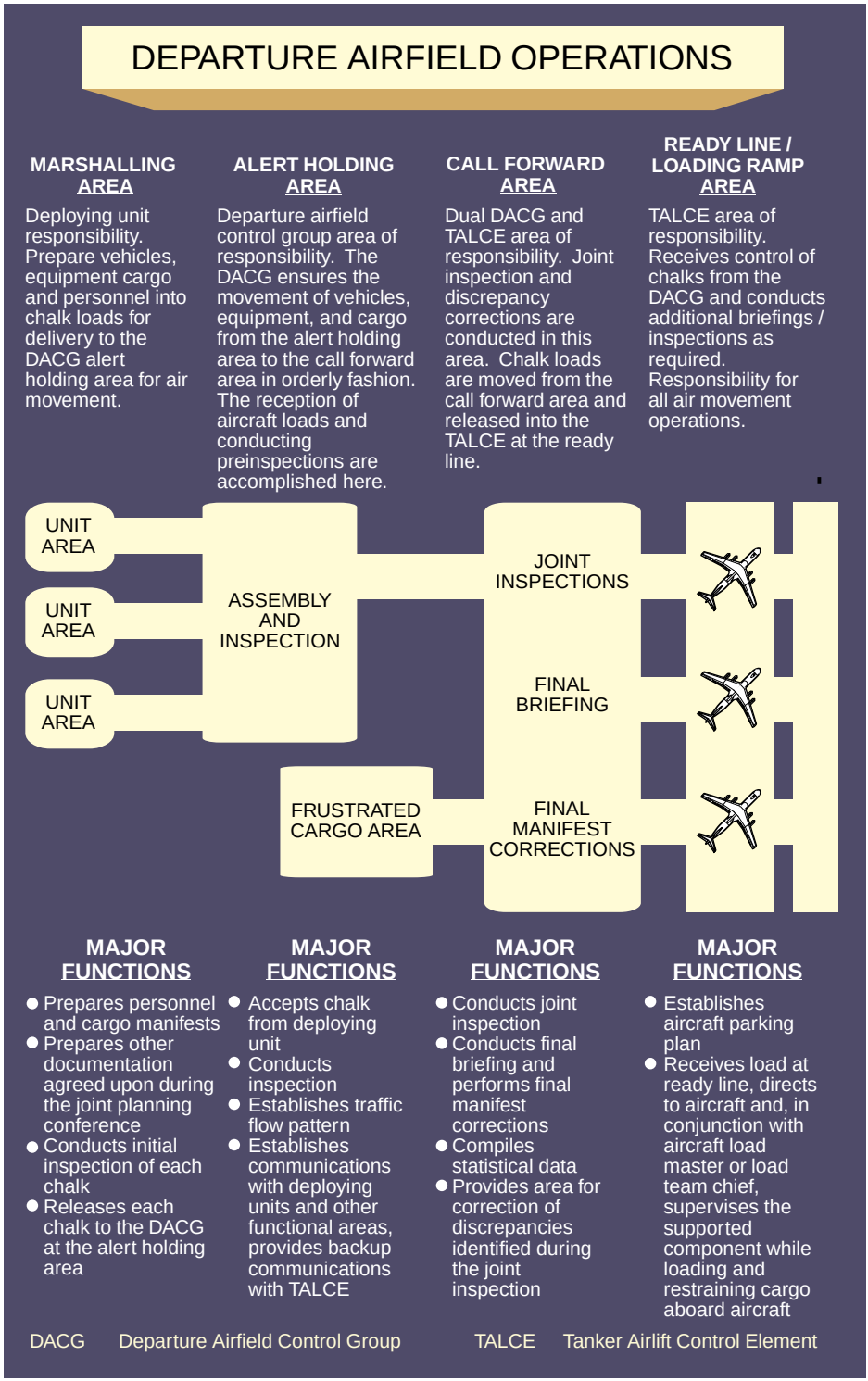


Figure V-3. Departure Airfield Operations

b. **Movement to Aircraft Loading Sites. The deploying commander assigns priorities for deploying unit cargo, vehicles, and equipment to loading sites** based on required loading and scheduled station times published in the air movement plan. **The deploying unit's installation major command provides transportation** to move personnel and chalk loads to aircraft. Whenever possible, movements are made at night to maximize operations security (OPSEC). Personnel in charge of aircraft chalk loads should receive **mission briefings** concerning the route to their respective aircraft. Personnel and equipment should arrive at onload airfields in accordance with prescribed times published in the air movement plan. **The TALCE controls airlift movement at the departure airfield.** Routes to and from loading areas should be clearly marked. Strict control of air and ground traffic is maintained on and across runways and strips.

Proper marshaling of deploying units enables forces to be transported with minimum confusion or delay.

c. **Preparation of Platform Loads.** If airdrop is part of the operation, **platform loads are prepared during marshalling**. When planning the preparation and marshalling of platform loads, **the following factors should be anticipated:**

- Additional lead time may be required.
- Skilled rigging supervision is needed.
- Required MHE.
- Adequate facilities, to include a relatively clean and illuminated rigging area, should be provided if tactically feasible.

d. **Cross-Loading.** Whether administrative or combat-loaded, aircraft also may be cross-loaded. **Cross-loading distributes supplies among aircraft to ensure that the entire supply of one item is not lost** by an abort or loss of one or some other small number of aircraft. Cross-loading does not alter the desirability of keeping ground force crews in the same aircraft as their vehicles, weapon systems, or other crew-served equipment.

e. **Arrival Airfield Operations.** Although arrival operations are not part of the marshalling process, they are **important in air movement**. If not orderly, arrival

operations could adversely affect the mission. **Arrival operations take place in three main areas—the offloading ramp, holding area, and unit area.** Cargo is offloaded from aircraft and shipped to the specified AACG offloading ramp. The AACG then processes and releases the cargo load to the deployed unit. Finally, the deployed unit is responsible for moving its cargo to the marshalling area, thus concluding air movement operations. This process **prevents congestion on the flight line** and **ensures arrival operations do not interfere with the planned air flow**. This process may be modified or streamlined for combat offload operations. Figure V-4 shows a typical layout of arrival airfield operations.

ARRIVAL AIRFIELD OPERATIONS

OFF-LOAD RAMP AREA

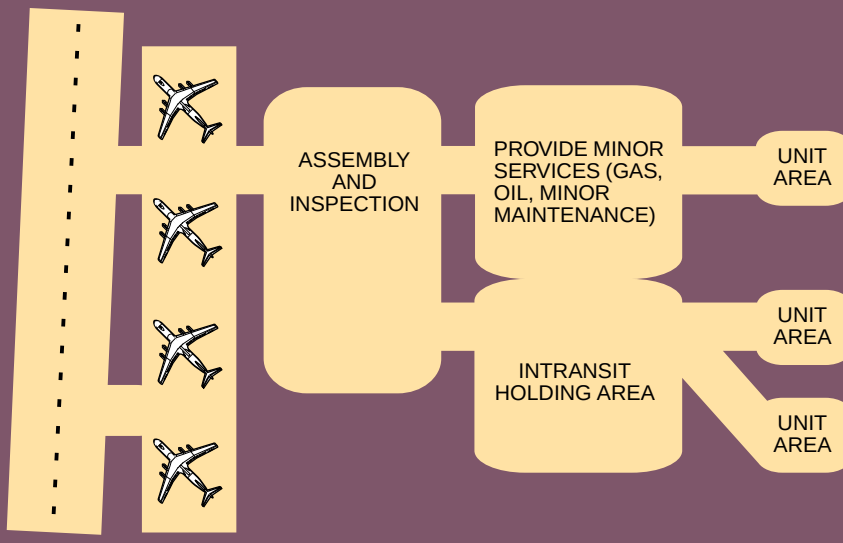
TALCE area of responsibility. Responsible for air traffic control, \aircraft parking, supervision of off-loading operation, and releasing planeload to AACG.

HOLDING AREA

AACG area of responsibility. Receives and processes planeloads (chalks) for release to the deployed unit.

UNIT AREA

Deployed unit area of responsibility. Unit receives planeloads from the AACG which terminates the air movement.



MAJOR FUNCTIONS

- Performs base operations and other related operational functions
- Coordinates flight clearances
- Maintains aircraft traffic logs and operations records
- Accomplishes aircraft parking and provides parking plan to AACG
- Monitors intelligence functions
- Establishes communication with the AACG

MAJOR FUNCTIONS

- Assembles chalk and inspects for completeness
- Provides minor services (gas, oil, minor maintenance).
- Develops statistical data
- Establishes radio and / or land lines to the unit area, functional areas, and backup communication with unloading area (TALCE)
- Establishes temporary storage area

MAJOR FUNCTIONS

- Accepts aircraft loads

AACG Arrival Airfield Control Group TALCE Tanker Airlift Control Element

Figure V-4. Arrival Airfield Operations

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CHAPTER VI
AERIAL DELIVERY OPERATIONS

"Five thousand balloons, capable of raising two men each, could not cost more than five ships of the line; and where is the prince who can afford so to cover his country with troops for its defense as that 10,000 men descending from the clouds might not in many places do an infinite deal of mischief before a force could be brought together to repel them."

Benjamin Franklin
Letter to Jan Ingenhousz, 1784

1. General

This chapter provides appropriate **guidelines and considerations that may be useful in developing exercise and combat aerial delivery operations**, to include both airdrop and extraction methods. This information describes the capabilities and minimum standards that airlift and airborne forces are trained to execute.

2. Responsibilities

a. **The airborne force commander and airlift mission commander should coordinate** with each other throughout the aerial delivery planning and mission execution **on matters such as:**

- The **suitability of flight routes** and DZ or EZ size.
- DZ or EZ **geographic relationship to the initial objective**.
- **Terrain conditions** on the DZ or EZ that could cause an unacceptable number of injuries, excessive equipment damage, loss, or other deployment delays.
- **Routes** to the DZ or EZ, terrain obstructions, ease of zone identification, and enemy defenses.
- Earliest possible collaboration on **intelligence matters**, to include requirements for intelligence data and imagery products.
- Identify **mission-critical cargo** and a **go or no-go decision point**.

b. **The airlift mission commander should also coordinate with the supported force commander** before determining the tactics to employ. Many factors influence this decision, including the size of DZs and EZs, surrounding terrain features, tactical scheme of maneuver, enemy air defenses, and en route and objective area weather.

c. **The JFC makes the decision to continue, cancel, or postpone the operation** based on the recommendations of the supported commander and AFCC.

3. Airdrop Support Responsibilities

a. **Clear command and control channels should be established** in the theater of operations. The airdrop system should be designed to be responsive in supporting requirements. **Airdrop resupply** is a joint action between the Air Force component and the component being supported. **Supported components** are

Supported units are responsible for rigging the loads of supplies for airdrop and delivering them to the departure airfield.

responsible for providing required supplies, rigging them for airdrop, and delivering them to the departure airfield. The supported component is also responsible for loading the supplies onto the airdrop aircraft under supervision of Air Force personnel.

b. **Units requesting airdrop resupply** have responsibilities to accomplish both before and after submission of airdrop requests. Before submitting requests, **units determine:**

- Supplies and equipment needed.
- Location of drop zone.
- Time and date airdrop is desired.

c. **After airdrop requests are submitted, units:**

- Prepare and secure the drop zone.
- Control the drop zone in the absence of an Air Force CCT. DZST personnel may operate DZs under visual meteorological conditions and instrument meteorological conditions for single-ship aircraft and formations up to and including three aircraft.
- Recover airdropped supplies and equipment.
- Recover, retrograde, or destroy airdrop equipment.

4. Drop Zone Types

a. **Tactical.** During exercises and operations, **tactical DZs** (DZs that have not been formally surveyed) are sometimes **selected to support highly mobile ground forces**. These DZs are evaluated and approved for use using tactical survey procedures. When using a tactical DZ, the airlift unit assumes responsibility for aircraft safety of flight while the receiving unit assumes responsibility for load condition. **The DZ size should be determined by method of delivery, load dispersal statistics, discussion with the receiving unit, and professional judgment.** Other considerations are recoverability of air drop equipment and

survivability or recoverability of the load. For example, small trees covering the entire DZ might limit the recovery of airdrop parachutes, but still allow complete recovery of the loads. Tactical DZs may be created within the boundaries of an existing surveyed DZ if needed to accomplish a particular mission. In this case, the tactical DZ need not use the existing dimensions or axis of approach as long as minimum DZ requirements are still met.

b. **Area. An area DZ, illustrated in Figure VI-1, consists of a start point (point A), an end point (point B), and a prearranged flight path (line of flight) over a series of acceptable drop sites between these points.** The distance between points A and B generally should not exceed 15 nautical miles (nms) or 28 kilometers, and changes in ground elevation along the line of flight should not exceed 300 feet or 90 meters. The distance of drop sites from the line of flight should not exceed 1/2 nm or 1 kilometer. **The reception committee is free to receive the drop at any location along the line of flight**; once the prebriefed DZ visual signal or electronic navigation aids (NAVAID) have been identified and located, the drop is made. DZ signals and NAVAIDs may be displayed or turned on during any portion of, or for all of, a 10-minute window. However, they should be displayed or turned on not less than 2 minutes prior to the scheduled arrival time of the aircraft over the start point of the DZ.

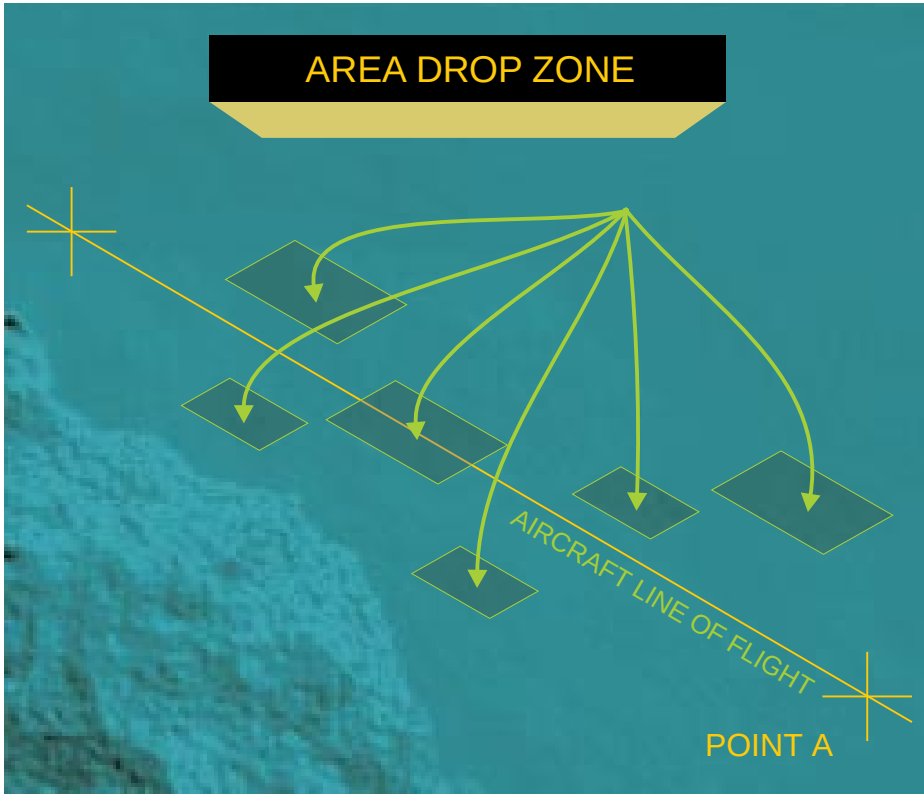

Figure VI-1. Area Drop Zone

c. **Circular. A circular DZ, shown in Figure VI-2, has multiple run-in headings.** Its size is governed by mission requirements and usable terrain. The radius of a circular DZ corresponds to the minimum required distance from the point of impact (PI) to one of the trailing edge corners of a rectangular DZ for the same type and number of loads being dropped. In other words, **the entire DZ box fits inside the circle**. Water DZs are normally circular in shape. The PI of a circular DZ is normally at the DZ center.

d. **Random Approach. Random approach DZs are circular, square, or rectangular** and large enough to permit multiple run-in headings. **Any axis of approach may be used** as long as the resulting DZ meets minimum criteria for the load being airdropped. The PI is normally placed at the DZ center.

5. Drop Zone Criteria and Considerations

a. **Drop Airspeeds. Specific airdrop airspeeds for each type aircraft are published in appropriate Service manuals or technical orders.** Except in emergencies, aircraft should not deviate from these established airspeeds. **Deceleration to prescribed drop airspeed and attainment of level flight altitude are required** to provide a stable platform for the actual airdrop of personnel, supplies, or equipment.

b. **Drop Zone Wind. Drop zone wind information is critical to airdrop accuracy** and aircrews must consider wind data from all available sources when determining the computed air release point. In addition to **inflight wind data**, aircrews are normally provided with drop

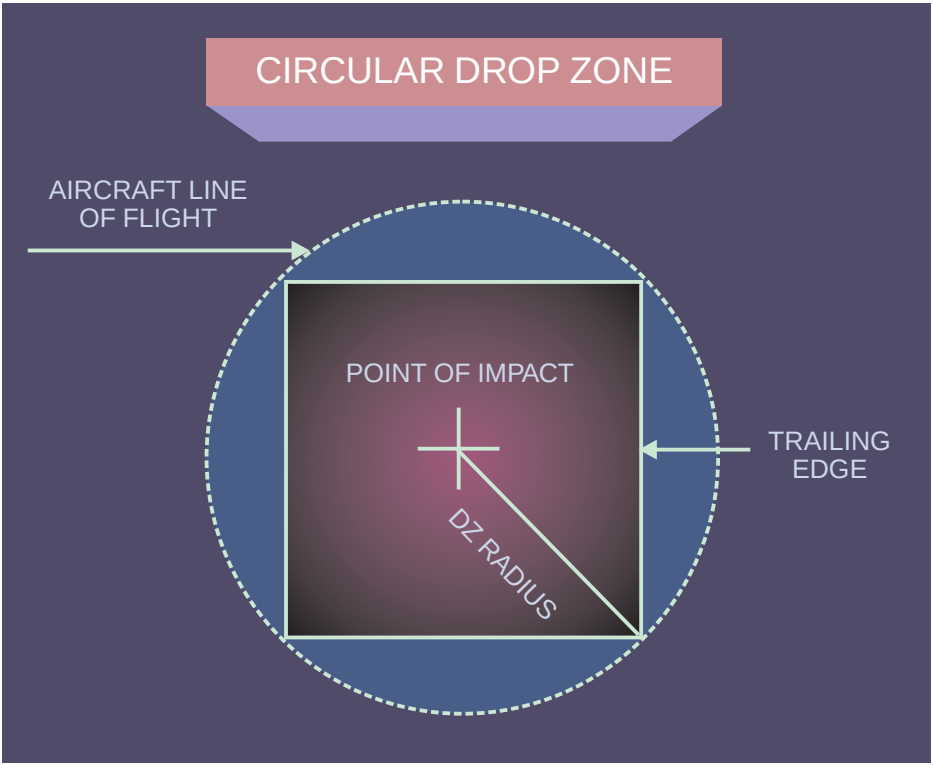

Figure VI-2. Circular Drop Zone

zone wind information from ground sources (such as CCTs or DZSTs) which includes **surface winds** and the **computed mean effective winds**. Additionally, ground sources can relay indications of possible wind shears or local phenomena that could affect wind direction or speed and, ultimately, impact upon airdrop or mission success. **Airdrop operations may not be feasible during conditions of strong or gusty surface winds.** The JFC, based on recommendations by the supported commander and the AFCC, may accept high risk, cancel, or postpone the operation because of excessive wind velocity on the DZ.

c. **Drop Altitudes. The airborne force commander and airlift mission commander establish minimum altitudes for airdropping personnel and materiel.** Minimum altitudes for airdrop operations are based on operational requirements of the personnel and cargo airdrop systems used. In a high-risk, high-threat environment, survivability of airlift aircraft may require dropping parachutists and equipment at the lowest possible altitude. Aircraft performing normal low-altitude, low-velocity airdrop operations should drop above the minimum altitude to increase load survivability.

d. **Drop Zone Size. The JFC determines the general area for the airborne operation. Factors influencing DZ selection are:** (1) physical characteristics of available DZs and surrounding areas, (2) threat assessment, (3) method of air delivery, (4) number of airdrop loads or personnel, and (5) length of the desirable dispersion pattern. **Subordinate ground commanders determine specific grid coordinates and grid reference** being used and pass these to the AFCC. During exercises and operations, DZ size and selection criteria are the joint responsibility of the AFCC and the supported commander. Following a survey of the DZ, **the AFCC determines the probability of success** of the airdrop and provides it to the ground commander. **The supported ground commander makes the final decision** to accept use of the DZ. For other than Air

All drop zone criteria and considerations must be within acceptable limits before "green light" on airdrop operations.

Force unilateral airdrops, the ground commander may waive normal minimum training DZ sizes on a "by exception" basis. For the most efficient use of the DZ, separate or multiple points of impact should be used for equipment and personnel.

If the DZ is too small for the delivery of a full aircraft load of parachutists, the **number** of parachutists **may be reduced**, **multiple DZs may be used** for one aircraft load, or aircraft may employ **multiple run-in procedures**, commonly referred to as "racetracks." Use of the latter tactic, however, increases risk to enemy action. Normal minimum training DZ sizes are shown in Figure VI-3. Figure VI-4 shows normal minimum training DZ sizes for high-altitude airdrop resupply system (HAARS) and high-velocity or delayed opening/high-altitude CDS. Minimum DZ sizes for SOF are shown in Figure VI-5 and apply unless precluded by mission requirements. The supported SOF unit assumes responsibility for drop accuracy and safety when it establishes and operates the DZ.

e. **Drop Zone Run-In Heading.** On circular or random run-in DZs, **the ground force commander must evaluate the risk of run-in headings** to troops on the ground from load malfunctions. If a run-in heading would place a malfunctioning load in a troop concentration, consideration must be given to changing either the run-in heading or the troop concentration locus.

f. **Drop Zone Markings.** Drop zone markings should be consistent with the threat situation. **Clear markings facilitate successful visual acquisition and authentication of the DZ**, increasing the probability of success. Drop zones are normally marked with a raised angle marker (RAM), marker panels, omnidirectional visible lighting systems, or electronic navigation aids. Virtually any type of overt lighting or visual marking system is acceptable if all participating units are briefed and concur in its use. Other **day markings** or visual acquisition devices include, but are not limited to, colored smoke, mirrors, or any reflective or contrasting marker panel, such as a space blanket. In some cases geographical points may be used. **Night markings** or acquisition aids may include a light gun, flares, fire or fire pots, railroad fuses, flashlights, and chemical lights. Combat

THE EARLY CONCEPT OF AIRLIFT

The response to the first flights by the Wright brothers on 17 December 1903, varied, regardless of whether one is considering the reactions of civilians or of military men. It did take some time before the achievements of the brothers became widely accepted. Initially, the military viewed the airplane as an extension of their experience with the balloon and the man-lifting kite, as purely an instrument for reconnaissance. Nevertheless, from this cautious and uninspiring beginning, other developments flowed, and it was not long before the value of the airplane as a message carrier became apparent, while other more warlike experiments were also undertaken well before the outbreak of World War I.

Perhaps the limited performance of the early flying machines was the main reason for such a limited perception of their possibilities, since the idea of the use of flying machines of one kind or another for transport had a long history. As early as 1670, a Jesuit Priest, Father Francesco de Lana de Terzi, drew an

aerial ship, to be kept aloft by four copper spheres "empty of air." Within a few years of the invention of the hot air balloon by the Montgolfier brothers in 1783, a print appeared depicting large hot air balloons, each capable of carrying 3,000 men, to carry Napoleon's armies with their horses and field artillery across the English Channel for an invasion of England. Balloons carried mail from Paris during 1870 and 1871 while the city was besieged by Prussian forces. On a different, but ultimately related area of development, the first parachute descent had been as early as 1797, by Andre Joseph Garnerin.

While many of these early predictions can be largely discounted because they preceded the invention of the airplane, ideas were not too long in coming during the years before World War I. A German military expert, Rudolf Martin, in 1908 suggested the construction of a fleet of 50,000 Wright biplanes to carry a force of 100,000 men for the invasion of England. The invasion force was to land in the southeast in Kent. This was a year before the Frenchman, Louis Bleriot, made the first flight across the English Channel.

One of the more forward-looking ideas did, nevertheless, come during the war years. Brigadier General William "Billy" Mitchell, while commanding officer of the Air Service, United States First Army in France, proposed that an infantry division should be parachuted to seize the city of Metz. The operation was proposed for 1919, and, of course, the collapse of German resistance and the Armistice intervened well before the plan could be put into action. Whether or not the parachuting of a 20,000-man brigade of infantry would have been practical in 1919 is open to question, but a limited operation might have had a chance of success.

There were a few practical transport operations by military aircraft during World War I, and on two occasions, the Royal Flying Corps and its successor, the Royal Air Force, used aircraft to supply ground forces cut off by enemy forces. The more successful of these was the air supply operation mounted to save Belgian and French troops cut off in the Houthulst Forest during October 1918. The Royal Air Force, just six months old at this time, was asked to drop supplies to the Allied troops, and two squadrons were assigned to the task; No.82 Army Cooperation Squadron, with Armstrong-Whitworth FK.8 biplanes and No.218 Squadron with Airco D.H.9 bomber biplanes. This, the first successful aerial supply mission in history, was mounted in the face of considerable practical problems. Sandbags were filled with soil and rations to provide a crude container weighing about 18 lbs, which would include eight small ration packs including such delicacies as 'bully' beef, stew, jam, and ships' biscuits or 'hard tack.' Starting on 1 October and flying until 4 October, the two squadrons mounted a total of almost 200 sorties and dropped 1,220 sandbags plus sixty boxes of ammunition, all of which had to be manhandled over the sides of the aircraft by the observers, and aircraft sometimes had to make as many as six runs over the drop zone before a full load could be supplied. Surprisingly, in view of what was to happen twenty-five years and more later at Stalingrad and at Arnhem, only one aircraft, a D.H.9, was lost. This operation ensured that the Belgians and French could hold out until relieved by advancing ground forces.

SOURCE: David W. Wragg, *Airlift: A History of Military Air Transport*, Presidio Press, 1986.

CDS (C-130)				
Altitude (AGL)*	Width (1)	No. of Containers Single	Double	Length (2)
To 600 ft	400 yd/365 m	1	1-2	400 yd/370 m
		2	3-4	450 yd/410 m
		3	5-6	500 yd/460 m
		4	7-8	550 yd/500 m
		5-8	9 or more	700 yd/640 m
Above 600 ft	Add 40 yd/35m to DZ width and length for each 100 ft above 600 ft (20 yd/18 m added to each side of the DZ).			
CDS (C-141)				
To 600 ft	450 yd/410 m	1	1-2	590 yd/540 m
		2	3-4	615 yd/560 m
		3	5-6	665 yd/610 m
		4-8	7-16	765 yd/700 m
		9-14	17-28	915 yd/835 m
		15-20	30-40	1065 yd/975 m
Above 600 ft	Add 40 yd/35 m to DZ width and length for each 100 ft above 600 ft (20 yd/18m added to each side of the DZ).			
HEAVY EQUIPMENT LENGTH (2)				
Altitude (AGL)	**Width (1)**	**1 Platform**	**Additional Platforms**	
To 1000 ft	600 yd/550 m	1000 yd/915 m	Add 400 yd/370 m (C-130) or 500 yd/460 m (C-141 or C-5) to trailing edge for each additional platform.	
Above 1000 ft	Add 30 yd/28 m to width and length for each 100 ft above 1100 ft (add 15 yd/14 m to each side of the DZ).			
PERSONNEL LENGTH (2)				
Altitude (AGL)	**Width (1)**	**1 Parachutist**	**Additional Platforms**	
To 1000 ft	600 yd/550 m	600 yd/550 m	Add 75 yd/70 m for each additional parachutist's trailing edge (100 yd/90 m when using CAPES)	
Above 1000 ft	Add 30 yd/28 m to width and length for each 100 ft above 1000 ft (add 15 yd/14 m to each side of the DZ).			

(1) (a) For day visual formations, increase width by 100 yd/90 m (50 yd/45 m each side).

(b) For station keeping equipment (SKE) formation, increase width by 400 yd/370 m (200 yd/185m each side).

(c) Official sunset to sunrise, increase width by 100 yd/90 m for visual drops (50 yd/45 m for each side) or 200 yd/180 m for visual formations (100 yd/90 m each side).

(2) Official sunset to sunrise, increase length by 100 yd/90 m for visual drops (50 yd/46 m each end). *above ground level (AGL)

Figure VI-3. Tactical Airlift DZ Size Criteria

HAARS CDS			
Altitude (Feet AGL)	**Width (Yards/Meters)**	**Length (Yards/Meters)**	
Up to 3000	500 yd/460 m	One to Eight Containers	Nine or More Containers
		1200 yd/1100 m	1900 yd/1740 m
Above 3000	Add 25 yd/23 m to each side and 50 yd/46 m to each end for every 1000 ft increase in drop altitude		
HIGH VELOCITY CDS*			
Altitude (Feet AGL)	**Width (Yards/Meters)**	**Length (Yards/Meters)**	
Up to 3,000	580 yd/530 m	One to Eight Containers	Nine or More Containers
		660 yd/600 m	Add 50 yd/45 m to trailing edge for each additional container
Above 3000	Add 25 yd/23 m to each side and 100 yd/90 m to each end for every 1000 ft increase in drop altitude		
* Using 12-foot, 22-foot, or 26-foot ring slot parachutes			

Figure VI-4. HAARS and High-Velocity CDS DZ Size Criteria

control units may also use specialized clandestine infrared lighting systems. **Electronic markings** may be used for either day or night operations. A verbal initiated release system may be used with **no markings**. In some situations, specially trained theater and strategic airlift crews may be called upon to conduct airdrop operations on an unmarked, blind drop zone.

- **Marking Considerations**

  •• **The DZ markings should be clearly visible to the aircrew** as early on the approach as possible. If conditions preclude placing the markings at the designated point, the drop zone controller (DZC) may have to adjust the location of the intended PI. However, the DZC should maintain adequate DZ clearance and, if possible, advise the aircrew of the change in PI location.

  •• As a security precaution, **night DZ markings should be visible only from the direction of the aircraft's approach**. If lights are used, they may be equipped with simple hoods or shields and aimed toward the approaching aircraft. Fires or improvised flares should be screened on three sides or placed in pits with the sides sloping toward the direction of approach. Regardless of the technique used, the markings must be clearly distinguishable from other lights (e.g., brush fires) or markings in the vicinity of the drop zone.

MARKED DROP ZONES

Type Drop	MC-130 (W x L)	AWADS (W x L)	C-130 (W x L)	C-141 (W x L)
Personnel (computer air release point (CARP))	300 x 300 yd 275 x 275 m	600 x 600 yd 550 x 550 m	600 x 600 yd 550 x 550 m	600 x 600 yd 550 x 550 m
Ground marked release system (GMRS)	300 x 300 yd 275 x 275 m	300 x 300 yd 275 x 275 m	300 x 300 yd 275 x 275 m	300 x 300 yd 275 x 275 m
Add 75 yd (69 m) to the length for each additional parachutist.				
CDS/CRS (CARP & GMRS)	400 x 400 yd 365 x 365 m	400 x 400 yd 365 x 365 m	400 x 400 yd 365 x 365 m	450 x 590 yd 410 x 540 m
Add 50 yd (45 m) to the DZ length for each additional container.				
HSLLADS/HSK (CARP & GMRS)	300 x 600 yd 275 x 550 m	N/A	N/A	N/A
Recovery Kit (CARP & GMRS)	200 x 200 yd 180 x 180 m	400 x 400 yd 365 x 365 m	400 x 400 yd 365 x 365 m	N/A
Heavy Equipment (CARP & GMRS)	600 x 1000 yd 550 x 915 m	600 x 1000 yd 550 x 915 m	600 x 1000 yd 550 x 915 m	600 x 1000 yd 550 x 915 m
For all except C-141, add 400 yd (366 m) to DZ length for each additional platform. For C-141, add 500 yd (457 m) to DZ length for each additional platform.				

BLIND DROP ZONES (1)

(Natural Radar Targets Only or Radar Beacon/Zone Marker on the DZ)

Type Drop	MC-130 (W x L)	AWADS (W x L)	C-130 (W x L)	C-141 (W x L)2
Personnel	600 x 600 yd 550 x 550 m	600 x 600 yd 550 x 550 m	600 x 600 yd 550 x 550 m	600 x 600 yd 550 x 550 m
Add 75 yd (69 m) to the length for each additional parachutist.				
CDS/container recovery system (CRS)	400 x 400 yd 365 x 365 m	400 x 400 yd 365 x 365 m	400 x 400 yd 365 x 365 m	450 x 590 yd 410 x 540 m
Add 50 yd (45 m) to the DZ length for each additional container.				
HSLLADS/HSK*	400 x 600 yd	N/A	N/A	N/A
Recovery Kit	400 x 400 yd 365 x 365 m	400 x 400 yd 365 x 365 m	400 x 400 yd 365 x 365 m	N/A
Heavy Equipment	600 x 1000 yd 550 x 915 m	600 x 1000 yd 550 x 915 m	600 x 1000 yd 550 x 915 m	600 x 1000 yd 550 x 915 m
For all except C-141, add 400 yd (366 m) to DZ length for each additional platform. For C-141, add 500 yd (457 m) to DZ length for each additional platform.				

(1) For all blind drops, add 30 yd (27 m) to each side and 30 yd (27 m) to each end of the DZ for each 100 ft increase in altitude above the minimum drop altitude for the load being dropped.

(2) C-141 aircraft require a SKE zone marker for blind drops.

(3) When supporting SOF, specially trained theater and intertheater airlift crews may be called upon to conduct airdrop operations on a blind drop zone. A blind DZ is one that is unmarked.

*High-speed, Low-Level air drop system/high-speed air drop

Figure VI-5. Special Operations DZ Size Criteria

•• During daylight airdrops, **the marker panels should slant at a 45-degree angle from the surface toward the aircraft approach path** to increase the aircrew's ability to see them. If security permits, smoke (other than red) may be displayed at the release point or downwind corner of the marker panels to assist in aircrew DZ acquisition.

- **Point of Impact Markings.** Normal PI locations are shown in Figure VI-6.

•• **Day Markings.** Unless otherwise coordinated with the aircrew, **the PI normally is marked with a RAM**. The RAM is aligned with the aircraft line of flight, with the base on the actual intended landing point. **Colored panels may be added** if required for additional identification or authentication. The panels should be placed flat on the surface in a shape designator, block letter, or other prebriefed symbol. For other than CDS drops, smoke should be displayed next to and downwind of the PI. For CDS, the visual acquisition signals normally will be displayed on DZ centerline, 150 yards or 137 meters short of the intended PI.

•• **Night Markings.** Unless otherwise coordinated with the aircrew, **the PI is normally marked with a block letter**, but can also be marked with infrared lights, beacons, or strobes. Again, identification must be agreed upon by the planning staff and briefed to the aircrews.

Type of Drop	Type of Aircraft	Distance From Approach End (Yards/Meters)		Distance From DZ Sides (Yards/Meters)	
		Day	Night	Day	Night
Single Aircraft (1)(2)					
CDS (1)(3)	C-130	200/185	250/230	200/185	250/230
CDS (1)(3)	C-141	225/205	275/250	225/205	250/230
Personnel	All	300/275	350/320	300/275	350/320
Equipment	All	500/455	550/500	300/275	350/320
Multiple Aircraft (1)(2)					
CDS (3)	C-130	N/A	N/A	N/A	N/A
CDS (3)	C-141	N/A	N/A	N/A	N/A
Personnel	All	300/275	350/320	350/320	400/365
Equipment	All	500/455	550/500	350/320	400/365

(1) For inertial navigation system (INS)/SKE/ zone marker (ZM) or AWADS, use day PI placement criteria for both day and night drops.

(2) PI location may be adjusted for special operations or to meet specific mission requirements. All participants should be briefed.

(3) PI location may be adjusted for aircrew PI acquisition training. The PI may be located anywhere within the surveyed DZ boundaries as long as the minimum required DZ size for that drop fits within the boundaries. All participants must be briefed when using this option.

Figure VI-6. Points of Impact Location

•• On small CDS (resupply) DZs, where obstacles may prevent timely visual acquisition by the aircrew, **the visual signals may be displayed at the trailing edge of the DZ** (on centerline or at another location on the DZ). If this option is used, the DZC thoroughly briefs all participating aircrews on the change in location.

- **Trailing Edge.** For night airdrops, **the trailing edge marking should be an amber light (or other designated light) placed on DZ centerline**, 1000 yards or 915 meters from the PI or the surveyed DZ trailing edge, whichever is closer, depending on the type of airdrop.

- **Flanker Lights.** For night drops, **one white flanker light will be placed 200 yards to the left and right side of the PI.**

- **No-Drop Signals.** The presence of **red smoke**, **red flares**, a **red beam** from a light gun, or any other precoordinated signal on the DZ **indicates a "no-drop" condition**. Communications security permitting, these visual signals may be confirmed by radio communication to the aircraft.

- **Visual Clearance.** Unless radio communications are specifically required, **any precoordinated marking displayed on the DZ**, other than red smoke, flares, or lights, **indicates clearance to drop**.

6. Drop Zone Surveys

In general, **there are two types of DZ surveys or assessments: complete and tactical**. **Safety-of-flight reviews should be done on all surveys by qualified Air Force personnel**. The proposed use for the DZ normally determines which type survey is required.

a. **Complete Survey. The complete survey is usually done well in advance of any planned use.** It provides a thorough chart analysis of the objective area to include ingress and egress routes. Complete survey includes inspection of the DZ by the ground party (CCT, using unit, or other qualified personnel).

b. **Tactical Survey. Tactical surveys are primarily used during exercises or operations.** Tactical surveys are normally restricted to resupply or single-ship airdrops. Although abbreviated, these surveys still include an inspection of the DZ by the CCT, TALO, or DZST if a qualified CCT or TALO is not available. They also include a chart analysis of the proposed route of flight to ensure safety of flight for the aircraft.

c. **Safety-of-Flight Review.** The safety-of-flight review will be performed on all drop zone surveys. It is **a thorough chart analysis of the objective area to include the approach and escape corridors**. This review is conducted by the appropriate functions at the lowest level possible. **The primary consideration for the airlift mission commander is aircraft safety.** Requesting units are responsible for determining if the DZ ground conditions are suitable for their use. Combat control teams may use any safety-of-flight-surveyed DZ.

d. **Drop Zone Survey Approval.** Units should forward completed survey packages to the appropriate wing or special operations group tactics function for review and analysis. **Tactics function personnel should perform the required chart analysis** and, when satisfied, forward the survey as per Service and theater directives.

7. Separation of Personnel and Equipment

a. **Separation times between personnel and equipment and the sequence of the drop are important considerations in an airdrop mission.** Terrain and threat assessment dictate whether the personnel or equipment are airdropped first.

b. **Combination drops** occur when parachutists exit from the cargo ramp **immediately after the release of equipment**. Equipment and personnel can also be dropped from separate aircraft on the same DZ **simultaneously** if equipment loads are sufficiently separated to provide adequate clearance for personnel. Such a course of action, though, requires the concurrence of the supported force and airlift mission commanders.

8. Equipment Delivery Operations

Air Force and ground force personnel support the loading of equipment on the aircraft. The ground forces are responsible for providing airdropped supplies and equipment, rigging equipment, and ground vehicles used in recovering the items. Army divisions, separate brigades and regiments, and Marine Corps MAGTFs possess varying capabilities to support airdrop operations. Normally, **only airborne divisions have organic airdrop equipment support elements**. All others receive support from corps or theater army area commands.

9. Types of Equipment Airdrop

See Figure VI-7.

a. **Free Drop. Free drop is airdrop without a parachute or retarding device** in which the load descends at a rate of 130 to 150 feet per second. Energy-dissipating material around the load lessens the shock when the load hits the ground. Items that may be free-dropped include fortification or barrier material, bales of clothing, and meals ready to eat.

b. **High-Velocity Drop. Ring-slot cargo, cargo extraction, and pilot parachutes are used to stabilize loads for high-velocity airdrop.** The parachute has enough drag to hold the load upright during the descent at 70 to 90 feet per second. Items to be high-velocity airdropped are placed on energy-dissipating material and rigged in an airdrop container. Such items might include subsistence, fuel products, and ammunition.

c. **Low-Velocity Drop. Cargo parachutes are used for low-velocity airdrop.** Items are rigged on an airdrop platform or in an airdrop container. Energy-dissipating material placed beneath the load lessens the shock when the load hits the ground. Cargo parachutes attached to the load reduce the rate of descent to no more than 28 feet per second. Fragile materiel, vehicles, and artillery may be low-velocity airdropped.

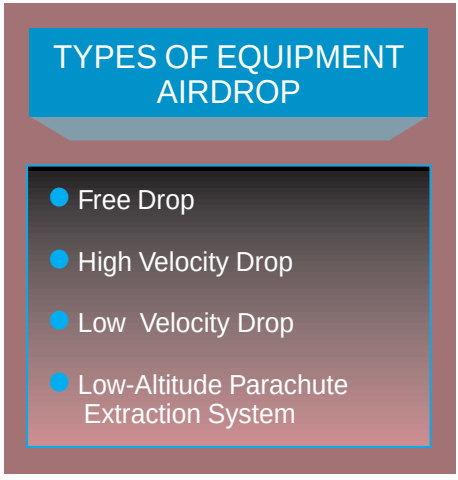

Figure VI-7. Types of Equipment Airdrop

d. **Low-Altitude Parachute Extraction System.** Almost every item that can be delivered by low-velocity airdrop can be delivered using LAPES airdrop. The load is rigged on a specially configured airdrop platform with energy dissipating material. **As the aircraft flies across the drop area, the load is extracted using the LAPES parachute**, which keeps the load aligned with the extraction zone, prevents tumbling, and slows its forward momentum. Extraction zones require careful site selection and depend on a variety of conditions. Specific standards should be used in locating and marking an EZ to ensure safe operations.

The Low Altitude Parachute Extraction System is used in situations where air landed operations are not feasible and pin-point resupply is necessary.

10. Joint Airborne Advance Party (JAAP)

a. **JAAP support for airlift operations** consists of a US Air Force CCT and a US Army LRST or the US Marine Corps equivalent. It **provides precise terminal instructions and NAVAIDs to airlift forces** so that they land on the assigned airfield or LZ. The JAAP provides terminal guidance, air traffic control, ground control measures, intelligence collection, and surface weather observations in the objective area.

b. **The JFC normally ensures specific mission tasks are developed for the JAAP** during the planning phase of an airborne operation. **Prior to employment**, the JFC or designated representative ensures the JAAP has adequate time for isolation, joint planning, logistic planning, and mission preparation. **During combat**, security considerations may prohibit use of a JAAP in advance of the parachute assault by the main force. **The decision to use the JAAP rests with the JFC.** Because the risk of compromise to OPSEC is involved in deploying the teams into the objective area before the airborne assault, **component commanders jointly set the time and method of delivery**. The planning factor for a CCT reconnaissance and surveillance of

an objective area assault zone is normally not more than 48 hours prior to the planned H-hour (H-48). The CCT should be operational as soon as possible after reaching the airfield, LZ, DZ, or EZ to ensure air traffic control services and navigational aids are functioning.

c. When a JAAP is employed in advance of airborne forces, **command and control is determined jointly and published in the OPORD**. Generally, the senior member of the LRST should be responsible for movement and disposition of the teams during infiltration and ground movement. Decisions regarding airfield, LZ, DZ, or EZ establishment and control are the responsibility of the senior CCT member.

d. The **ground force commander determines when initial security missions are completed** and directs that follow-on units establish and maintain contact with the CCT. **Decisions are passed to the CCT** as well as the identity and location of units assuming security responsibilities.

e. **The JAAP may be inserted into an objective area by:**

- Airdrop or airlanding in advance of the airborne forces. If airdropped, insertions are usually made by either high-altitude low-opening or high-altitude high-opening techniques.
- Airdrop or airlanding in the lead serial of an airborne assault.
- Infiltration by land or sea.

f. **These employment methods provide the JFC options to support operations** ranging from overt conventional to clandestine unconventional warfare and special operations.

g. **Elements of the JAAP may operate either independently** in the objective area **or collectively** from the same patrol base. They remain in contact with the JFC and airborne mission commander, share JCEOIs, and conduct a linkup immediately prior to the airborne assault for intelligence or information transfer.

11. Air Force DZ, LZ, and EZ Control Officer

a. **DZ Control Officer.** The mission commander may provide a qualified **Air Force DZ control officer (DZCO)** on each DZ during joint exercises and operations.

b. **LZ Control Officer and EZ Control Officer.** During exercises and operations, the mission commander may provide a qualified **Air Force LZ control officer (LZCO)** or **EZ control officer (EZCO)** for each zone. The LZCO and EZCO observe and evaluate factors that might adversely affect the safety and efficiency of the operation.

c. **Supported Service Component DZSO and Drop Zone Support Team Leader (DZSTL) Functions.** During operations when the CCT is not present, the **supported Service component DZSTL** has overall responsibility for DZ operations and represents both the airborne and the airlift commanders. **The DZSTL assumes all responsibilities normally associated with the US Air Force CCT and supported component drop zone safety officer.** DZSTs have the missions of supporting wartime CDS airdrops for battalion-size units and below, and the airdrop of personnel, equipment, and CDS for one to three aircraft operations.

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CHAPTER VII
AIRLAND DELIVERY OPERATIONS

"Nobody has seen a transport operation until he has stood at 'Broadway' under the light of a Burma moon and watched Dakotas coming in and taking off in opposite directions on a single strip at the rate of one take-off or one landing every three minutes."

Air Marshal Baldwin
Commander of the Tactical Air Force of South East Asia
On observing airlift operations behind enemy lines in Burma, 1944

1. General

There are two types of airland operations that provide transportation within a theater or joint operations area. The first is the **routine movement of personnel and equipment** within the theater during peacetime or contingency operations. The second type is the **airlanding of combat forces** directly into an objective area as the situation allows.

Channel and SAAM airlift missions are used to accomplish routine movement of personnel and equipment into unopposed and secure airfields during peacetime or contingency operations.

2. Routine Air Movement of Personnel and Equipment

Routine air movement is usually unopposed and uses secure airfields or well-established landing zones; the majority of these missions involve the **administrative airlift of troops and equipment**. Because these requirements may often exceed theater resources, consideration should be given to establishing channel and SAAM missions for the regular movement of personnel, supplies, and equipment.

a. **Channels. Channels are common-user airlift services provided on a scheduled basis** between two points based on forecasted cargo and passenger movement requirements. These forecasts are the primary input in allocating airlift capability. **Periodic analysis of movement over specific channels validates forecast requirements.** If disparities are identified between forecasts and actual movement, actions can be taken to modify routing or cancel the channel to optimize airlift availability and ensure aircraft are not under-utilized. **There are two types of channel missions:**

- **Requirement channels** are a category in which the frequency and type of service provided between locations depend on the volume of cargo or passenger traffic forecasted by the users.

- **Frequency channels** provide guaranteed airlift service, regardless of the volume of cargo and passenger traffic. The theater planners should consider frequency channels on the basis of operational necessity, sensitive political or diplomatic reasons, or morale improvement in remote areas.

b. **Special Assignment Airlift Missions. SAAMs provide service for the exclusive use of an agency to meet special considerations** of pickup, delivery, classification, off-route requirements, or other factors that preclude the use of channel airlift. In effect, **this is a chartered mission** supporting that particular request. Units submit their request through their component validator to the theater validator. If approved, the theater validator forwards the requests to the JAOC for tasking.

3. Airlift Operations (Airland)

Certain phases of any airlift operation, or the entire operation, **may be accomplished by airlanding combat troops and equipment directly to the objective area**. When considering this type of operation, the JFC and component commanders should assess the situation to determine if the risk involved by using airland operations outweighs conducting aerial delivery operations.

4. Responsibilities

a. **The ground force commander establishes priority and sequence** of airlanding personnel, equipment, and supplies based on the planned tactical employment of these forces. The airlift mission commander selects the air tactics and designs the flow of air movement to comply with the delivery requirement.

b. **The airlift mission commander establishes control through the CCT** of all air traffic movement (traffic pattern, landing, taxi, parking, and takeoff) at Air Force operated LZs, and also is responsible for movement control of ground vehicles at these locations and space allocation for operations and living areas.

TACTICAL AIRLIFT IN VIETNAM

Throughout the War in Southeast Asia, American and Vietnamese forces relied heavily on tactical airlift to satisfy the logistical demands of the conflict. While doctrine normally dictated the use of railroads and roads first to move supplies, there was simply no way other than aircraft to move quickly the necessary volume of men and materiel over difficult terrain that was subject to frequent interdiction by the enemy. Tactical airlift had to support simultaneously the full range of US and Vietnamese activities: irregular forces, covert operations, remote outposts, and full-scale conventional operations involving thousands of men. And the support had to be provided despite shortages of aircraft and crews, bureaucratic inefficiency, and chronic scheduling problems.

The successful accomplishment of the mission was a testament to the skill and determination of those who flew and supported the thousands of transport sorties so vital to the allied effort. Theirs was a record of continual ingenuity and innovation in tactics, techniques, organization, and equipment. In total tonnage moved, Air Force tactical airlift in Southeast Asia very quickly exceeded previous efforts in the China-Burma-India theater in World War II, the Berlin Airlift, or the Korean War.

Tactical airlift matured in Vietnam. American airlift personnel worked with the French prior to their pull out in the mid-1950s, and started assisting South Vietnamese in the years just prior to the massive American involvement. Tactics were developed, and then changed constantly in an effort to adapt to current military situations. Sometimes the old procedures did not apply. For example, the dropping of paratroops, long a staple of tactical airlift, was only marginally successful and in 1966 was largely abandoned in favor of helicopter-borne assault forces. But the early involvement in airborne assault did provide experience in supporting a seemingly endless variety of missions and helped shape the future of the airlift mission.

Few tactical airlift missions in Vietnam could be called routine; weather, terrain, enemy action, and the usual snafus saw to that. Tactical airlift forces lost 122 aircraft and 229 crew members in Vietnam, many while attempting to deliver critical cargo to friendly units surrounded or besieged by enemy forces. Some crew members earned prestigious decorations, including the Medal of Honor, for their performance in the face of enemy fire; others died lonely deaths from causes that will probably go forever unrecorded. But the cargo virtually always got through when it was within the realm of possibility.

A positive theme throughout the war was the cooperation between tactical airlift and its primary user, the US Army. Army personnel grumbled about late deliveries and the occasionally inaccurate airdrop of supplies, but with the exception of the siege of An Loc in 1972 the complaints were surprisingly minor. In the case of An Loc, Army personnel were sharply critical of the Air Force for the length of time it took to devise successful airdrop methods in the face of an unprecedented anti-aircraft threat. Yet even this criticism became muted when new and successful tactics were introduced. The key to the successful Army-Air Force relationship was the willingness at all levels of command in both Services to exchange information, to work together, and to appreciate the other Service's problems. The lessons learned in Vietnam ought to have a major impact at the inter-Service management level in any future conflict.

SOURCE: Richard H. Kohn, Forward to *Tactical Airlift*, Office of Air Force History, 1983.

c. **The A/DACG is organized from the Forward Support Battalion or other supporting units.** For a MAGTF, the A/DACG comes from the CSSE. These supporting units should enter the objective area early as part of the airlifted force.

d. **The airlift mission and airland force commanders prepare plans to deal with disabled aircraft on the LZ.** The ground commander provides assistance in moving disabled aircraft that interfere with landing operations.

5. Concept of Employment

a. **Units deployed to an area of operations by strategic airlift may be reloaded onto theater airlift for employment in the objective area.** Under certain conditions, units may be configured for combat and loaded on airlift aircraft at bases in CONUS and delivered directly to the objective area. When loads must be transferred from one aircraft to another, units should consider the required MHE needed to transfer the airborne force to another aircraft.

b. **The integrity of participating units is a major consideration in an airland operation.** When enemy contact appears imminent upon landing, combat units are landed intact with weapons, ammunition, and appropriate combat equipment. The airland force commander normally determines the makeup of each aircraft load and the sequence in which these loads are delivered. During **resupply operations**, supplies and equipment that require minimal movement and handling are delivered to locations within the objective area at a planned rate. To reduce ground times, aircraft may be loaded or unloaded with their engines running.

c. **Airland operations may be conducted independently of or in conjunction with parachute operations.** Adequate training and equipment substitution or modification permit every type of Army and Marine Corps combat unit to participate in airland operations. To conduct airland operations with parachute operations, paratroopers may make the initial assault to secure, repair, or construct a suitable LZ or airland facility.

6. Combat Offloading

Combat offloading is a method of rapidly delivering palletized equipment and supplies from Air Force or Marine Corps aircraft. These operations are characterized by **speed**, **rapid turnaround** of aircraft, and **limited exposure** of aircraft to enemy operations. However, combat offloading operations may result in damage to platforms or 463L pallets. More importantly, combat offloading may close a taxiway until the cargo can be moved, thus restricting further airlift deliveries. Consequently, **this method of delivery should be used only when necessary**.

7. Air Direct Delivery

a. **Air direct delivery is a strategic airlift mission which lands at a forward operating base** and does not involve a theater airlift transshipment in conjunction with the strategic airlift. **Considerations in selecting air direct delivery include:**

- Ground plan.
- Suppression of enemy air defenses.
- Proximity and capacity of airfields at destination.
- Offload capability at destination airfield to include the need for additional MHE and logistical personnel.
- The ground force package may be designed for delivery from CONUS to forward areas. Light forces have limited organic transportation capability.

b. **The direct delivery concept should be routinely employed for airland delivery operations** to forward support areas. Air direct delivery shortens intransit time, reduces congestion at main operating bases, and enhances sustainment of forward forces.

c. **Congested airspace, exposure to enemy threats, and potential fratricide are major concerns in direct delivery.** Increased direct delivery capabilities and requirements require that all Services re-evaluate their ability to accept these deliveries in forward areas. APODs may be split into several smaller forward operating bases. Supported commanders may be required to do some of the terminal airhead operations normally performed by Air Force personnel.

Direct delivery to capable forward operating locations is routinely employed to shorten transit time and avoid unnecessary congestion at main operating bases.

8. Landing Zone Selection

The component commanders and the joint force engineer determine the most suitable LZ locations. The selected sites must meet Air Force operational requirements, ground component requirements, and construction considerations.

a. **Construction.** If an airfield is to be constructed, **the supported component engineer, the JFC designated representative, and the Air Force staff engineer must agree on its specific site**. The supported component engineer controls the selected site until the designated representative of the airlift mission commander accepts use of the LZ.

- **Aircraft may have to use LZ facilities before construction is completed.** In addition to emergency landing situations, delivery of additional construction equipment, emergency supplies, or reinforcing units may be necessary. Such use should be jointly agreed to by the supported component construction engineer and the designated representative of the airlift mission commander.

- **When established construction requirements have been met** and the airlift mission commander or designated representative accepts the LZ, **operational control of the LZ passes to the airlift mission commander**. The construction engineer assigns a minimal force to repair and maintain the critical landing surfaces, taxiway, and hardstands. The composition and size of the unit will depend on the threat situation, type and location of the LZ, availability of engineer forces, expected LZ use, and weather.

b. **Criteria**

- Although the senior planning headquarters assigns the general landing area, **subordinate units usually designate specific LZs**. Desirable characteristics of LZs are ease of identification from the air; a straight,

unobstructed, and secure approach for aircraft; and close proximity to ground objectives. **LZs to be developed into more sophisticated facilities should have these additional characteristics as shown in Figure VII-1.**

- **LZs should be classified** according to the applicable aircraft and airfield criteria furnished by the construction engineer. **Essential airland facilities should be identified before the operation begins.** Minimum facilities are provided initially to permit early occupancy and for safe and efficient landing operations. Plans and orders should provide for later improvements to increase the efficiency of operations and safety factors of the facility.

- **LZ dimensions vary** according to the types of aircraft involved. Factors considered include aircraft ground roll, temperature, field elevation, and nature and conditions of the landing surface. Expected maximum takeoff and landing gross weights, obstructions, and terrain on approach and departure should also be considered.

- **Existing facilities**, such as roads and open areas, **should be used** to reduce the time and effort for new construction. Furthermore, **airland facilities should be dispersed** to avoid becoming lucrative targets. Host-nation support agencies may be used to identify emergency or contingency runways.

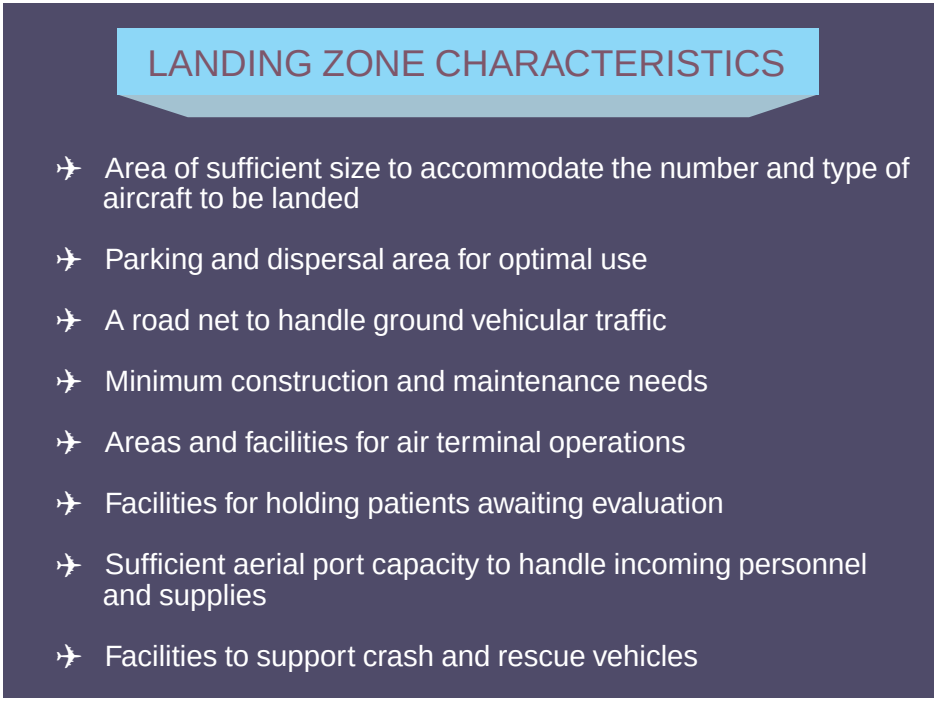

Figure VII-1. Landing Zone Characteristics

APPENDIX A
BRIEFING FOR AIRBORNE OPERATIONS

The following is a guide from which briefing officers may prepare outlines using those items that apply to the particular operation. The joint force operations officer conducts the briefing with the assistance of other joint and component staff officers as indicated. Before the briefing begins, briefing officers should distribute folders containing forms, maps, photos, and other reference material required for the operation.

COMMANDING OFFICER (JFC).

Introduction of unit commanders.

Concept of the operation.

D-day and H-hour.

Airlift units participating.

Number of transport aircraft participating.

Airfields to be used.

General location of DZs and LZ.

General airdrop procedures.

Alternate Objective Areas.

Recall Procedures.

WEATHER OFFICER (AIR FORCE)

General weather trends.

Weather over DZ/LZ with special emphasis on visibility, cloud base, and surface wind.

Winds at drop altitude.

Mean effective wind over the DZ/LZ.

Winds along proposed routes.

Weather at return base.

INTELLIGENCE OFFICER.

Air Station.

Enemy capabilities:
- Aircraft.
- SAM/AAA.
- Areas of expected small arms fire.

Security.

Evasion and Escape:
- Procedures.
- Navigation Aids.
- Routes and Tactics.
- Information.

Weather along proposed routes.

Survival.

Challenge and countersign signals.

Intelligence Debriefing.

Intelligence reports required.

OPERATIONS OFFICER (AIR FORCE).

Marshalling:
- Departure airfields.
- Aircraft parking plan.
- Aircraft chalk numbers.
- Vehicle routes to be used on airfields.

Aircraft loading and enplaning:
- Total number of personnel and total amount of cargo.
- Specific loads by chalk number will be designated.
- Type of parachutes, equipment, and weight loads for heavy drop (HD) aircraft.

Loading times.

Collection of load manifests.

Sequence of flight:
- Description of serials by number or letter.
- Serial commanders and deputy commanders.
- Sequence of flights by serials.
- Types of formations to be used.
- Position of aircraft in formation.
- Runways to be used.
- Taxi routes.
- Aircrew stations and time at aircraft.
- Start engines time.
- Taxi time.
- Abort procedures.
- Takeoff time.
- TOT.
- Time of return to departure airfield or home base.

Spare aircraft:
- Parking plan for spare aircraft.
- Procedures to be used.

Takeoff and form-up procedures.

NAVIGATION OFFICER (AIR FORCE).

Routes:
- Courses, tracks, times, and distances.
- Departure point.
- Force rendezvous.
- Initial Point (IP).
- Line of flight over DZ, LZ, or EZ.
- Return route.
- Last point of interception of force formation for aircraft having delayed takeoffs.

Navigational aids:
- En route.
- On the DZ/LZ (electronic and/or visual).

Altitudes, airspeeds, and pressure setting procedures:
- Form up.
- Routes.
- Run in.
- Drop.
- Return.
- Form up.
- Routes.
- Run in.
- Drop.
- Return.

Turn off DZ.

Alternate DZ, LZ, or EZ information for above steps as applicable.

Time check.

COMMUNICATIONS/SIGNALS OFFICER.

Call sign and call words.

Frequencies.

Radio Silence.

Procedures for emergencies.

Security and codes.

OPERATIONS OFFICER (SUPPORTED UNIT).

Signals for dropping.

Drop or landing procedures.

DZs and LZs:
- Identification features as seen from the air.
- Specified areas of DZ on which each serial is to drop.
- Specified area for different landings.
- Visual aids on DZs.
- Alternate DZ/LZ/EZ if appropriate.

OPERATIONS OFFICER (AIR FORCE).

Emergency procedures:
- Abandon aircraft.
- Crash or emergency landing.
- Ditching.
- Emergency airfields.
- Search and rescue facilities.
- Salvo areas.
- Escort/cover by fighter aircraft:
- Number and type.
- Rendezvous point with formation.
- Fighter tactics.
- Landing and parking after return from mission.
- Formation recovery (peel-off and pattern for landing).
- Taxi route and parking plan.
- Time for final pilot briefing prior to "station time" for last minute information.

Responsibility of pilots for passenger briefing after enplaning:
- Signals for drop.
- Emergency procedures.
- Flight safety rules.

Miscellaneous:
- Additional briefing or critiques.
- Meals.
- Transportation.
- Time for completion of aircraft serviceability check or pre-flight check.
- Reporting maintenance problems before engine start, prior to taxi, and prior to takeoff.
- Required reports.
- Questions pertaining to briefing.

TACTICAL OPERATIONS (SUPPORTED UNIT)

Airborne unit involved:
- Tactical plan,.
- Landing plan.

DZs and LZs:
- Terrain features.
- Size.
- Ground intelligence pertaining to DZ/LZ.
- Ground information desired in postflight debriefing.
- Disposal of returned personnel or equipment.

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APPENDIX B
REFERENCES

This publication is based on the following primary sources:

1. (DD Form 1974) USMTF, AFP 102-2, VOL I, "Joint User Handbook for Message Text Formats."

2. Joint Pub 0-2, "Unified Action Armed Forces (UNAAF)."

3. Joint Pub 1-01, "Joint Publication System, Joint Doctrine and Joint Tactics, Techniques, and Procedures Development Program."

4. Joint Pub 1-02, "Department of Defense Dictionary of Military and Associated Terms."

5. Joint Pub 2-0, "Joint Doctrine for Intelligence Support to Operations."

6. Joint Pub 2-01, "Joint Intelligence Support to Military Operations."

7. Joint Pub 3-0, "Doctrine for Joint Operations."

8. Joint Pub 3-01.4, "JTTP for Joint Suppression of Enemy Air Defense (J-SEAD)."

9. Joint Pub 3-07, "Joint Doctrine for Military Operations Other Than War."

10. Joint Pub 3-09.2, "JTTP for Ground Radar Beacon Operations (J-BEACON)."

11. Joint Pub 3-10.1, "JTTP for Base Defense."

12. Joint Pub 3-52, "Doctrine for Joint Airspace Control in the Combat Zone."

13. Joint Pub 3-54, "Joint Doctrine for Operations Security."

14. Joint Pub 3-56, "Command and Control for Joint Operations."

15. Joint Pub 3-56.1, "Command and Control of Joint Air Operations."

16. Joint Pub 4-0, "Doctrine for Logistic Support of Joint Operations."

17. Joint Pub 4-01.1, "JTTP for Airlift Support to Joint Operations."

18. Joint Pub 4-01.3, "JTTP for Joint Movement Control."

19. Joint Pub 4-02.2, "JTTP for Patient Evacuation in Joint Operations."

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APPENDIX C
ADMINISTRATIVE INSTRUCTIONS

1. User Comments

Users in the field are highly encouraged to submit comments on this publication to the Joint Warfighting Center, Attn: Doctrine Division, Fenwick Road, Bldg 96, Fort Monroe, VA 23651-5000. These comments should address content (accuracy, usefulness, consistency, and organization), writing, and appearance.

2. Authorship

The lead agent for this publication is the US Air Force. The Joint Staff doctrine sponsor for this publication is the Director for Operational Plans and Interoperability (J-7) Joint Staff.

3. Change Recommendations

a. Recommendations for urgent changes to this publication should be submitted:

TO: CSAF WASHINGTON DC//XOX/XOXD//
FROM: JOINT STAFF WASHINGTON DC//J7-JDD//

Routine changes should be submitted to the Director for Operational Plans and Interoperability (J-7), JDD, 7000 Joint Staff Pentagon, Washington, D.C. 20318-7000.

b. When a Joint Staff directorate submits a proposal to the Chairman of the Joint Chiefs of Staff that would change source document information reflected in this publication, that directorate will include a proposed change to this publication as an enclosure to its proposal. The Military Services and other organizations are requested to notify the Director, J-7, Joint Staff, when changes to source documents reflected in this publication are initiated.

c. Record of Changes

CHANGE NUMBER	COPY NUMBER	DATE OF CHANGE	DATE ENTERED	POSTED BY	REMARKS

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c. Additional copies should be obtained from the Military Service assigned administrative support responsibility by DOD Directive 5100.3, 1 November 1988, "Support of the Headquarters of Unified, Specified, and Subordinate Joint Commands."

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Air Force:	Air Force Publications Distribution Center 2800 Eastern Boulevard Baltimore, MD 21220-2896
Navy:	CO, Navy Aviation Supply Office Distribution Division (Code 03443) 5801 Tabor Avenue Philadelphia, PA 19120-5000
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GLOSSARY
PART I—ABBREVIATIONS AND ACRONYMS

AACG	arrival airfield control group
AAGS	Army air-ground system
ABCCC	airborne battlefield command and control center
ACA	airspace control authority/airlift clearance authority
ACL	allowable cabin load
A/DACG	arrival/departure airfield control group
AFCC	Air Force component commander
AIRLIFTREQ	airlift request
ALOC	air lines of communications
ALCC	airlift coordination cell
AMC	Air Mobility Command
AME	air mobility element
AOC	air operations center
AOR	area of responsibility
APOD	aerial port of debarkation
ATMCT	air terminal movement control team
AWADS	adverse weather aerial delivery system
BCE	battlefield coordination element
C4	command, control, communications, and computers
CCT	combat control team
CDS	container delivery system
CONUS	continental United States
CRC	control and reporting center
CRS	container recovery system
CSS	combat service support
CSSE	combat service support element (USMC)
DACG	departure airfield control group
DIRMOBFOR	Director of Mobility Forces
DZ	drop zone
DZC	drop zone controller
DZCO	drop zone control officer
DZSO	drop zone safety officer
DZST	drop zone support team
DZSTL	drop zone support team leader
EPW	enemy prisoners of war
EZ	extraction zone
EZCO	extraction zone control officer
FMCC	force movement control center (USMC)
FSSG	force service support group (USMC)

GLO	ground liaison officer
HAARS	high-altitude airdrop resupply system
HE	heavy equipment
ISB	intermediate staging base
JAAP	joint airborne advance party
JAOC	joint air operations center
JCEOI	joint communications-electronics operating instructions
JFACC	joint force air component commander
JFC	joint force commander
JI	joint inspection
JMC	joint movement center
JOA	joint operations area
J-SEAD	joint suppression of enemy air defenses
JTTP	joint tactics, techniques, and procedures
LAPES	low-altitude parachute extraction system
LNO	liaison officer
LRST	long-range surveillance team
LZ	landing zone
LZCO	landing zone control officer
MAGTF	Marine air-ground task force
MCC	movement control center
MHE	materials handling equipment
MOOTW	military operations other than war
MSE	mission support element
MST	mission support team
N4	Navy component logistics staff officer
NAVAID	navigation aids
NBC	nuclear, biological, and chemical
nm	nautical mile
OPCON	operational control
OPORD	operation order
OPSEC	operations security
PI	point of impact
POL	petroleum, oils, and lubricants
PSYOP	psychological operations
RAM	raised angle marker
SAAF	small austere airfield
SAAM	special assignment airlift mission

SECOMP	secure en route communications package
SOF	special operations forces
SOJ4	special operations component logistics officer
SOLE	special operations liaison element
TACC	tanker airlift control center
TACP	tactical air control party
TACS	theater air control system
TACT	tactical aviation control team
TALCE	tanker airlift control element
TALO	theater airlift liaison officer
TAMCA	theater army movement control agency
TOC	tactical operations center
TOT	time over target/time on target
UNAAF	Unified Action Armed Forces
USCINCTRANS	Commander in Chief, United States Transportation Command
USTRANSCOM	United States Transportation Command
WOC	wing operations center

accompanying supplies. Unit supplies that deploy with forces. (Joint Pub 1-02)

adverse weather aerial delivery system. The precise delivery of personnel, equipment, and supplies during adverse weather, using a self-contained aircraft instrumentation system without artificial ground assistance, or the use of ground navigational aids. Also called AWADS. (Approved for inclusion in the next edition of Joint Pub 1-02)

aerial port control center. The agency responsible for the management and control of all aerial port resources and for the receipt and dissemination of all airlift requirements received from the airlift coordination cell as the joint force commander's agent. Also called APCC. (Approved for inclusion in the next edition of Joint Pub 1-02)

airborne. 1. In relation to personnel, troops especially trained to effect, following transport by air, an assault debarkation, either by parachuting or touchdown. 2. In relation to equipment, pieces of equipment that have been especially designed for use by airborne troops during or after an assault debarkation. It also designates some aeronautical equipment used to accomplish a particular mission. 3. When applied to materiel, items that form an integral part of the aircraft. 4. The state of an aircraft, from the instant it becomes entirely sustained by air until it ceases to be so sustained. A lighter-than-air aircraft is not considered to be airborne when it is attached to the ground, except that moored balloons are airborne whenever sent aloft. (Joint Pub 1-02)

airborne operation. An operation involving the air movement into an objective area of combat forces and their logistic support for execution of a tactical or a strategic mission. The means employed may be any combination of airborne units, air transportable units, and types of transport aircraft, depending on the mission and the overall situation. (Joint Pub 1-02)

air direct delivery. The strategic air movement of cargo or personnel from an airlift point of embarkation to a point as close as practicable to the user's specified final destination, thereby minimizing transshipment requirements. Air direct delivery eliminates the traditional Air Force two step strategic and theater airlift transshipment mission mix. (Joint Pub 1-02)

airdrop. The unloading of personnel or materiel from aircraft in flight. (Joint Pub 1-02)

airhead. 1. A designated area in a hostile or threatened territory which, when seized and held, ensures the continuous air landing of troops and materiel and provides the maneuver space necessary for projected operations. Normally it is the area seized in the assault phase of an airborne operation. 2. A designated location in an area of operations used as a base for supply and evacuation by air. (Joint Pub 1-02)

air landed. Moved by air and disembarked, or unloaded, after the aircraft has landed or while a helicopter is hovering. See also air movement. (Joint Pub 1-02)

air landed operation. An operation involving air movement in which

personnel and supplies are air landed at a designated destination for further deployment of units and personnel and further distribution of supplies. (Approved for inclusion in the next edition of Joint Pub 1-02)

airlift coordination cell. A cell within the air operations center which plans, coordinates, manages, and executes theater airlift operations in the area of responsibility or joint operations area. Normally consists of an airlift plans branch, an airlift operations branch, and an airlift logistics branch. Also called ALCC. (Approved for inclusion in the next edition of Joint Pub 1-02)

airlift mission commander. A commander designated when airlift aircraft are participating in airlift operations specified in the implementing directive. The airlift mission commander is usually designated by the commander of the deployed airlift unit, but may be selected by the Air Force Component Commander or joint force air component commander depending on the nature of the mission. (Approved for inclusion in the next edition of Joint Pub 1-02)

air mobility element. The air mobility element is an extension of the Air Mobility Command Tanker Airlift Control Center deployed to a theater when requested by the geographic combatant commander. It coordinates strategic airlift operations with the theater airlift management system and collocates with the air operations center whenever possible. Also called AME. (Approved for inclusion in the next edition of Joint Pub 1-02)

air movement. Air transport of units, personnel, supplies, and equipment including airdrops and air landings. See also airdrop. (Joint Pub 1-02)

allocation (air). The translation of the air apportionment decision into total numbers of sorties by aircraft type available for each operation or task. (Approved for inclusion in the next edition of Joint Pub 1-02)

allowable cabin load. The maximum payload which can be carried on an individual sortie. Also called ACL. (Approved for inclusion in the next edition of Joint Pub 1-02)

apportionment (air). The determination and assignment of the total expected air effort by percentage and/or by priority that should be devoted to the various air operations or geographic areas for a given period of time. (Approved for inclusion in the next edition of Joint Pub 1-02)

back-haul airlift. The rearward movement of personnel and materiel from an air terminal in forward deployed areas back to a staging base (either in theater or out) after the normal forward delivery. (Approved for inclusion in the next edition of Joint Pub 1-02)

chalk number. The number given to a complete load and to the transporting carrier. (Joint Pub 1-02)

combat control team. A small task organized team of Air Force parachute and combat diver qualified personnel trained and equipped to rapidly establish and control drop, landing, and extraction zone air traffic in austere or hostile conditions. They survey and establish terminal airheads as well as provide guidance to aircraft for airlift operations. They provide command and control, and conduct reconnaissance, surveillance, and survey assessments of potential objective airfields or assault zones. Also have capability to perform limited weather observations and removal of obstacles or

unexploded ordinance with demolitions. Also called CCT. (Approved for inclusion in the next edition of Joint Pub 1-02)

combat loading. The arrangement of personnel and the stowage of equipment and supplies in a manner designed to conform to the anticipated tactical operation of the organization embarked. Each individual item is stowed so that it can be unloaded at the required time. (Joint Pub 1-02)

coordinating authority. A commander or individual assigned responsibility for coordinating specific functions or activities involving forces of two or more Services or two or more forces of the same Service. The commander or individual has the authority to require consultation between the agencies involved, but does not have the authority to compel agreement. In the event that essential agreement cannot be obtained, the matter shall be referred to the appointing authority. Coordination authority is a consultation relationship, not an authority through which command may be exercised. Coordinating authority is more applicable to planning and similar activities than to operations. (Joint Pub l-02)

departure area. The general area encompassing all base camps, bivouacs, and departure airfield facilities. (Approved for inclusion in the next edition of Joint Pub 1-02)

departure site(s). Individual airfield facilities which are used by an airborne force to launch an airborne operation. (Approved for inclusion in the next edition of Joint Pub 1-02)

director of mobility forces. The director of mobility forces (DIRMOBFOR) will normally be a senior officer who is familiar with the area of responsibility (AOR) or joint operations area (JOA) and possesses an extensive background in airlift operations. When established, the DIRMOBFOR serves as the designated agent of the Air Force Component Commander or joint force air component commander, if designated, for all airlift issues in the AOR or JOA, and for other duties as directed. The DIRMOBFOR exercises coordinating authority between the airlift coordination cell, the air mobility element, the Tanker Airlift Control Control Center, the joint movement center, and the air operations center in order to expedite the resolution of airlift problems. The DIRMOBFOR may be sourced from the theater's organizations, United States Transportation Command, or United States Atlantic Command. Also called DIRMOBFOR. (Approved for inclusion in the next edition of Joint Pub 1-02)

extraction zone. A specified drop zone used for the delivery of supplies and/or equipment by means of an extraction technique from an aircraft flying very close to the ground. (Joint Pub 1-02)

follow-up supplies. Supplies delivered after the initial landings or airdrop to resupply units until routine supply procedures can be instituted. These supplies may be delivered either automatically or on an on-call basis and are prepared for delivery by supporting supply units. (Approved for inclusion in the next edition of Joint Pub 1-02)

high altitude low opening parachute technique. A method of delivering personnel, equipment, or supplies from airlift aircraft which must fly at altitudes above the threat umbrella. Also called HALO. (Approved for inclusion in the next edition of Joint Pub 1-02)

immediate airlift requests. Requests generated which, due to their time-critical nature, cannot be filled by a planned mission. (Approved for inclusion in the next edition of Joint Pub 1-02)

joint airborne advance party. An advance ground party that provides terminal guidance, air traffic control, ground control measures, intelligence gathering, and surface weather observation in the objective area of an airlift operation. It may consist of US Air Force combat control team members and a US Army long-range surveillance team or similar type forces. Also called JAAP. (Approved for inclusion in the next edition of Joint Pub 1-02)

joint force commander. **A** general term applied to a combatant commander, subunified commander, or joint task force commander authorized to exercise combatant command (command authority) or operational control over a joint force. Also called JFC. (Joint Pub 1-02)

joint suppression of enemy air defenses. **A** broad term that includes all suppression of enemy air defenses activities provided by one component of the joint force in support of another. Also called J-SEAD. (Joint Pub 1-02)

jumpmaster. The assigned airborne-qualified individual who controls parachutists from the time they enter the aircraft until they exit. (Joint Pub 1-02)

landing plan. In airlift operations, indicates the sequence, method of delivery, and place of arrival of troops and materiel. (Approved for inclusion in the next edition of Joint Pub 1-02)

loading time. In airlift operations, a specified time established jointly by the airlift and airborne commanders concerned, when aircraft and loads are available and loading is to begin. (Approved for inclusion in the next edition of Joint Pub 1-02)

loadmaster. An Air Force technician qualified to plan loads, to operate auxiliary materials handling equipment, and to supervise loading and unloading of aircraft. (Approved for inclusion in the next edition of Joint Pub 1-02)

low altitude parachute extraction system. A low level self-contained system capable of delivering heavy loads into an area where air landing is not feasible from an optimum aircraft wheel altitude of 5 to 10 feet above ground level. One or more platforms may be dropped. Also called LAPES. (Approved for inclusion in the next edition of Joint Pub 1-02)

marshalling. 1. The process by which units participating in an amphibious or airborne operation group together or assemble when feasible or move to temporary camps in the vicinity of embarkation points, complete preparations for combat, or prepare for loading. 2. The process of assembling, holding, and organizing supplies and/or equipment, especially vehicles of transportation, for onward movement. (Joint Pub 1-02)

planned airlift requests. Requests generated to meet airlift requirements which can be forecast or where requirements can be anticipated and published in the air tasking order. (Approved for inclusion in the next edition of Joint Pub 1-02)

point of impact. 1. The point on the drop zone where the first parachutist or air dropped cargo item lands or is expected to land. 2. The point at which

a projectile, bomb, or re-entry vehicle impacts or is expected to impact. (Joint Pub 1-02)

routine supplies. Those items delivered as a result of normal requisitioning procedures to replace expended supplies or to build up reserve stocks. (Approved for inclusion in the next edition of Joint Pub 1-02)

serial (Air Force). Any number of aircraft under one commander, usually conveying one air-transportable unit or subunit to the same objective. (Approved for inclusion in the next edition of Joint Pub 1-02)

station time. In air transport operations, the time at which crews, passengers, and cargo are to be on board and ready for the flight. (Joint Pub 1-02)

stick (air transport). A number of paratroopers who jump from one aperture or door of an aircraft during one run over a drop zone. (Joint Pub 1-02)

Tanker Airlift Control Center. The Air Mobility Command direct reporting unit responsible for tasking and controlling operational missions for all activities involving forces supporting USTRANSCOM's global air mobility mission. The Tanker Airlift Control Center is comprised of the following functions: current operations, command and control, logistics operations, aerial port operations, aeromedical evacuation, flight planning, diplomatic clearances, weather, and intelligence. Also called TACC. (Approved for inclusion in the next edition of Joint Pub 1-02)

Tanker Airlift Control Element. A mobile command and control organization deployed to support strategic and theater air mobility operations at fixed, en route, and deployed locations where air mobility operational support is nonexistent or insufficient. The Tanker Airlift Control Element provides on-site management of air mobility airfield operations to include command and control, communications, aerial port services, maintenance, security, transportation, weather, intelligence, and other support functions, as necessary. The Tanker Airlift Control Element is composed of mission support elements from various units and deploys in support of peacetime, contingency, and emergency relief operations on both a planned and "no notice" basis. Also called TALCE. (Approved for inclusion in the next edition of Joint Pub 1-02)

theater airlift. That airlift assigned to the combatant command (command authority) of a combatant commander other than USCINCTRANS, which provides air movement and delivery of personnel and equipment directly into objective areas through air landing, airdrop, extraction, or other delivery techniques; and the air logistic support of all theater forces, including those engaged in combat operations, to meet specific theater objectives and requirements. (Approved for inclusion in the next edition of Joint Pub 1-02)

theater airlift liaison officer. An officer specially trained to implement the theater air control system and to control tactical airlift assets. Theater airlift liaison officers are highly qualified, rated airlift officers, with tactical (airdrop) airlift experience, assigned duties supporting US Army units. Also called TALO. (Approved for inclusion in the next edition of Joint Pub 1-02)

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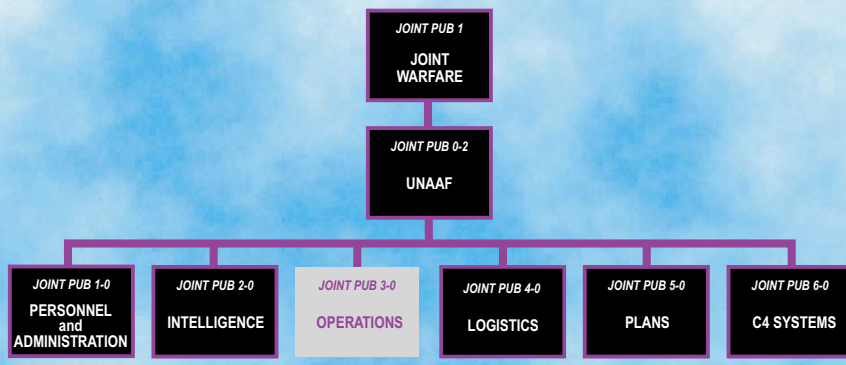
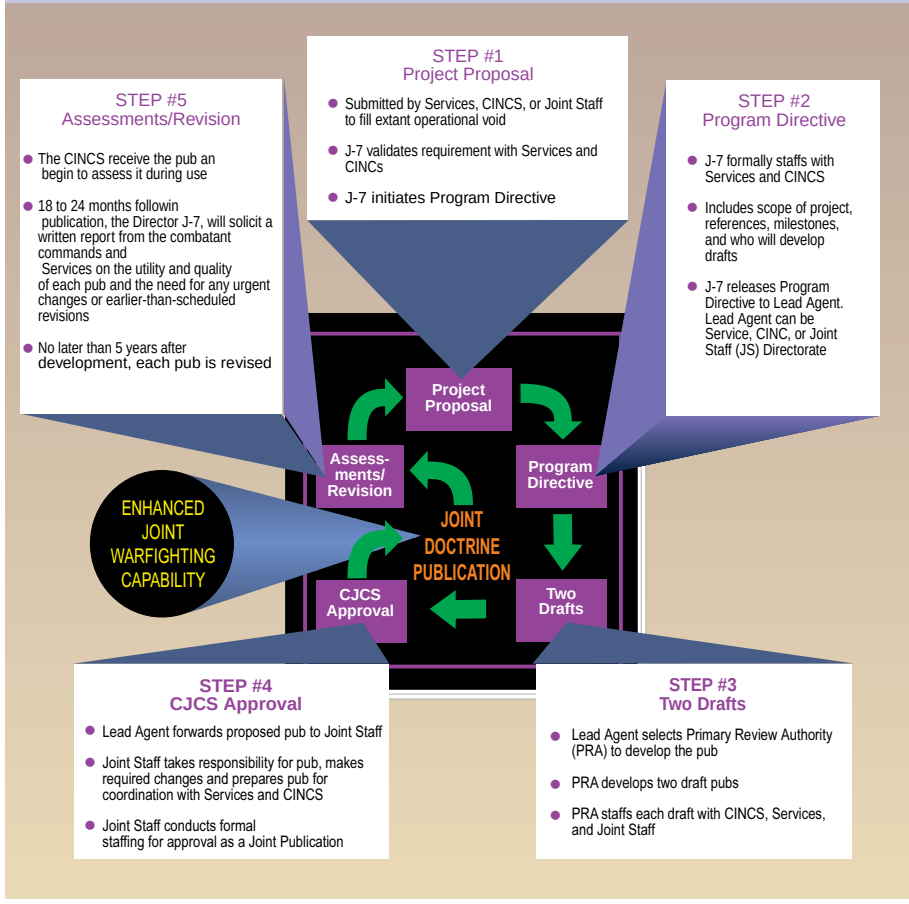


All joint doctrine and tactics, techniques, and procedures are organized into a comprehensive hierarchy as shown in the chart above. **Joint Pub 3-17** is located in the **Operations** series of joint publications. The diagram below illustrates an overview of the development process:

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