Joint Publication 3-17

Air Mobility Operations

5 February 2019

PREFACE

1. Scope

This publication provides fundamental principles and guidance for planning, employing, and assessing air mobility operations across the range of military operations.

2. Purpose

This publication has been prepared under the direction of the Chairman of the Joint Chiefs of Staff (CJCS). It sets forth joint doctrine to govern the activities and performance of the Armed Forces of the United States in joint operations, and it provides considerations for military interaction with governmental and nongovernmental agencies, multinational forces, and other interorganizational partners. It provides military guidance for the exercise of authority by combatant commanders and other joint force commanders (JFCs), and prescribes joint doctrine for operations and training. It provides military guidance for use by the Armed Forces in preparing and executing their plans and orders. It is not the intent of this publication to restrict the authority of the 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 objectives.

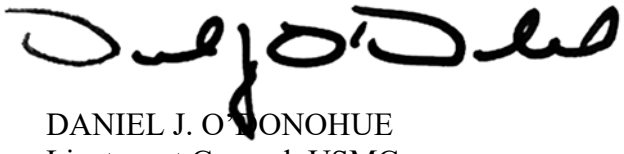
3. Application

a. Joint doctrine established in this publication applies to the Joint Staff, commanders of combatant commands, subordinate unified commands, joint task forces, subordinate components of these commands, the Services, and combat support agencies.

b. This doctrine constitutes official advice concerning the enclosed subject matter; however, the judgment of the commander is paramount in all situations.

c. If conflicts arise between the contents of this publication and the contents of Service publications, this publication will take precedence unless the CJCS, 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 procedures 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 and consistent with US law, regulations, and doctrine.

For the Chairman of the Joint Chiefs of Staff:



DANIEL J. O'DONOHUE
Lieutenant General, USMC
Director, Joint Force Development

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SUMMARY OF CHANGES
REVISION OF JOINT PUBLICATION 3-17
DATED 20 SEPTEMBER 2013

- **Updates relationships and roles.**
- **Updates for consistency with other joint publications (JPs).**
- **Adds description of air mobility liaison officers.**
- **Updates information on joint deployment and distribution operations center, joint task forces, host-nation support, mobility air forces cost avoidance tankering, public affairs, and Army aviation.**
- **Adds descriptions of United States Navy and United States Marine Corps reserve airlift.**
- **Clarifies and reorganizes mission funding categories.**
- **Clarifies role of the director of mobility forces.**
- **Removes tactical details of airdrop and arrivals.**
- **Reorganizes order of chapters and updates chapter on Air Mobility Support.**
- **Updates aeromedical evacuation section and removes redundancy with JP 4-02, *Joint Health Services*.**
- **Updates description of channel airlift missions to distinguish between distribution and contingency channels, as well as role of United States Transportation Command.**
- **Updates mobility support to special operations.**

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EXECUTIVE SUMMARY
COMMANDER'S OVERVIEW

- **Describes how the air mobility network combines airlift, air refueling, aeromedical evacuation, and air mobility support assets, processes, and procedures to support the transport of personnel and materiel**
- **Explains command and control of air mobility operations**
- **Discusses planning air mobility operations**
- **Describes air mobility support, airlift, and air refueling missions**
- **Outlines the Global Air Mobility Support System**

General Overview

The Secretary of Defense directs the assignment of air mobility forces to the Commander, United States Transportation Command, and other combatant commanders.

Air mobility is the rapid movement of personnel, materiel, and forces to and from, or within, a theater by air. This includes both airlift and air refueling (AR). The air mobility network combines airlift, AR, aeromedical evacuation (AE), and air mobility support assets, processes, and procedures to support the transport of personnel and materiel.

Air mobility enables commanders to simultaneously execute the joint functions of movement and maneuver and sustainment at the strategic, operational, and tactical levels of warfare.

Deployment

Deployment encompasses all activities from origin or home station through destination, specifically including intracontinental US, intertheater, and intratheater movement legs, staging, and holding areas.

Air Mobility Forces Employment Missions

Air mobility forces conduct employment missions when they airlift units, cargo, or personnel; offload fuel in ground operations; or refuel aircraft during operations. Given the assumption of immediate combat, user requirements should dictate scheduling and load planning.

Movement and Maneuver

Rapid global mobility uniquely contributes to movement and maneuver. Air mobility forces enhance other forces' combat power and flexibility, either by extending their range, bolstering their staying power, or providing them with greater maneuverability. Airlift allows deployment of critical early entry force packages over strategic distances without delays caused by terrain or obstacles.

Sustainment

Routine sustainment air mobility missions involve movement of materiel and personnel to reinforce or resupply forces already deployed or employed in operations and include missions flown in support of military and nonmilitary organizations involved in humanitarian relief operations.

Combat sustainment air mobility operations involve movement of supplies, materiel, and personnel to reinforce or resupply units already engaged in combat. Combat sustainment planning usually assumes requirements and threat situations limit flexibility of delivery times, locations, and configurations of specific loads.

Air Mobility Fundamentals

There are two basic methods of delivery: airland and airdrop. The delivery method is based on user requirements, type of environment, availability, adequacy, security of airfields, landing zones, drop zones near the objective area, threats to the objective area, and aircraft/aircrew capability.

Air mobility missions are 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 Global Air Mobility Support System (GAMSS) assets. Surge operations allow for rapid and substantial movement of cargo and personnel because a large number of assets are committed toward the operation but can only be sustained for a short time.

Global Mobility Enterprise

The global mobility enterprise (GME) is an integrated series of nodes that support air mobility operations. The four components of the enterprise

consist of Airmen, equipment, infrastructure, and command and control (C2). The GME optimizes the capacity and velocity of the air mobility system to support the combatant commanders (CCDRs). The enterprise requires global situational awareness through collaboration, coordinated operations, and adherence to air mobility processes.

Command and Control of Air Mobility Operations

The value of air mobility forces lies in their ability to exploit and enhance the speed, range, flexibility, and versatility inherent in air operations.

Centralized control and decentralized execution of air mobility missions are the keys to effective and efficient air mobility operations. Centralized control allows commanders to focus on those priorities that lead to victory, while decentralized execution fosters initiative, situational responsiveness, and tactical flexibility. Although it is not necessary for a single global organization to centrally control all air mobility forces, all commanders should envision air mobility as a global system capable of simultaneously performing intertheater and intratheater missions.

Command and Control Structures

Effective and efficient employment of air mobility forces requires a clear understanding of the associated command relationships and control processes affecting the application of these forces.

Intertheater air mobility serves the continental United States (CONUS)-to-theater and theater-to-theater air mobility needs of the geographic combatant commanders (GCCs). Air mobility assets assigned to United States Transportation Command (USTRANSCOM) execute the majority of intertheater airlift missions.

Intratheater air mobility operations are defined by geographic boundaries. Air mobility forces assigned or attached to the GCC normally conduct these operations. Intratheater common-user air mobility assets are normally scheduled and controlled by the theater air operations center or joint air operations center (JAOC) if established.

Joint Task Force (JTF) Air Mobility Operations. During joint operations, it may be necessary to

establish a JTF within a GCC's area of responsibility (AOR). This allows the GCC to maintain a theater-wide focus and, at the same time, respond to a regional requirement within the theater. When this occurs, a JTF will be designated and forces made available for this operation.

The air mobility C2 system relies on consistent processes and the ability to rapidly expand to meet the specific needs of the task at hand. When a JTF is formed, command relationships for air mobility forces will be established by the JTF establishing authority, normally exercised through the joint force air component commander/commander, Air Force forces.

Command and Control of Airfields During Contingency Operations

USTRANSCOM, through the Air Mobility Command (AMC), performs single port manager (SPM) functions necessary to support the strategic flow of the deploying forces' equipment and sustainment from the aerial port of embarkation (APOE) and hand-off to the supported CCDR in the aerial port of debarkation (APOD). The SPM provides strategic deployment status information to the supported CCDR and to manage workload of the APOE and APOD based on the CCDR's priorities and guidance.

To facilitate C2 at joint-use airfields, the joint force commander designates a senior airfield authority (SAA) responsible for safe airfield operations. The SAA controls airfield access and coordinates for airfield security with the base commander or base cluster commander or the joint security coordinator for the area if a base commander has not been designated.

Planning Air Mobility Operations

Air Mobility Planning Considerations

Joint Airspace Control. Air mobility planners should be involved in the creation of the airspace control plan. Air mobility aircraft typically require preferred altitudes and routing to avoid or mitigate threats.

Air Corridors or Operating Areas. Airlift and AR operations often require secure air corridors or

operating areas. These may be shared with other air missions. Regardless, the use of a corridor requires close coordination between the appropriate airspace control authority, the area air defense commander, the JAOC, and all other joint force component ground and aviation elements.

Marshalling

Marshalling includes the preparations required to plan, document, and load equipment and personnel aboard the aircraft. The marshalling plan provides the administrative and logistic procedures to accomplish these tasks. The marshalling area is usually located near departure camps and airfields to conserve resources and reduce the opportunity for observation.

Intelligence

The intelligence planning effort must be focused to ensure it is responsive to the commander's requirements and the requirements of the subordinate units. To ensure the intelligence effort addresses the commander's needs and is fully synchronized with operations, it is imperative the appropriate intelligence staff elements be fully involved in the operations planning process from the outset. Pertinent information must be analyzed concerning the operational environment pertaining to potential threats. Information shortfalls and the commander's critical information requirements must be identified early, converted into intelligence requirements, and submitted for collection or production as requests for information.

Vulnerabilities and Threats

Air mobility forces are vulnerable during all phases of theater and international flight operations, at home station, APOEs, en route locations, APODs, and forward airfields. Mission planning must include a thorough analysis of vulnerabilities requirements throughout all phases of flight and ground operations.

Air mobility planning must begin with threat analysis and threat avoidance. Normally, mobility assets operate in a permissive to low-threat environment. However, antiaccess and area denial

capabilities of threats should be considered when planning and conducting air mobility operations.

Communications Systems

Communication planning integrates the communications capabilities of joint force components. These plans should include en route communications procedures and automated information systems to support movement reporting; call words or call signs, frequencies, communications equipment, and supplies to be delivered; the sequence of their delivery; and code words for significant events.

Sustainment

Operations and logistics are most effectively integrated as part of a collaborative planning process that includes subordinate component commands, supporting commands, and global providers. Equally important with planning is the active integration of sustainment movements from point of origin to point of need to ensure seamless delivery and retrograde of sustainment cargo. USTRANSCOM develops integrated distribution route structures based on the needs of the CCDRs to ensure timely performance through all segments of the joint distribution pipeline.

Assessment

Assessments must be conducted prior to and during air mobility operations. Airfields, to include capabilities and limitations, and airland facilities available in the departure and arrival areas must be assessed, particularly those in underdeveloped countries where their status may be questionable. Assessors must ensure the user's requirement is being met in accordance with established priorities and air mobility forces are being used efficiently and adapting to changes in the operations tempo or focus. Evaluation tools must include metrics to determine on-time delivery amount of cargo/fuel on- or off-loaded and airdrop delivery precision.

Continuous operational assessment that links operational objectives to airlift tasks is the key to ensuring effective employment of air mobility assets.

Multinational Planning Considerations

In planning for multinational operations, the joint planner should be aware of the legal considerations in providing or receiving logistics support from multinational partners. The planning process should include the legal advisor in all stages of multinational operations planning and execution for legal compliance.

Air Mobility Support

Airlift and air refueling force

Air mobility support force is divided between USTRANSCOM, which controls the majority of assets in its global/functional combatant command (CCMD) role, and the geographic CCMDs that control other assets to meet their specific regional needs. These forces, combined with the interrelated processes that move information, cargo, and passengers, make up GAMSS. This structure consists of a number of CONUS and en route locations, as well as deployable forces capable of augmenting the fixed en route locations or establishing operating locations where none exist.

Capabilities of Air Mobility Support

The capabilities provided by the GAMSS are C2, aerial port operations, and aircraft maintenance. While GAMSS functions at fixed locations are robust, the deployable assets are designed to be temporary in nature with a planned redeployment or replacement.

Global Air Mobility Support System Elements

AMC GAMSS forces are aligned under the US Air Force Expeditionary Center's administrative control, with assets at fixed overseas locations, as well as CONUS-based deployable assets.

GAMSS fixed assets are sized, manned, and equipped to support peacetime common-user air mobility operation.

GAMSS deployable assets are tailored to meet mission requirements, designed for a decreased transportation and logistics footprint, and are not designed as long-term assets.

Airfield Opening and Global Air Mobility Support System

GAMSS forces may be the first US Air Force presence on an expeditionary airfield regardless of how the airfield is gained (e.g., seizure or

acceptance from a host nation) or which follow-on US or multinational entity will operate the airfield. When opening an airfield, GAMSS forces normally coordinate actions with theater command elements to ensure theater-specific responsibilities, such as force protection, meet mission requirements.

Airlift

Airlift operations transport and deliver forces and materiel through the air in support of strategic, operational, and/or tactical objectives

Airlift offers its customers a high degree of speed, range, and flexibility. Airlift enables commanders to respond and operate in a wide variety of circumstances and time frames that would be impractical through other modes of transportation.

Airlift Missions

The primary mission of airlift is passenger and cargo movement. This includes combat employment and sustainment, AE, special operations support, and operational support airlift. The airlift system has the flexibility to surge and meet requirements that exceed routine, peacetime demands for passenger and cargo movement.

Combat employment missions allow a commander to insert surface forces directly and quickly into battle and to sustain combat operations. Airlift affords commanders a high degree of combat maneuverability permitting them to bypass adversary troop strongholds.

Airland Delivery

Planners should view airland delivery as the primary means for most air movements. 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 has entered a hover.

Airdrop

Airdrop of forces, equipment, and/or supplies support the joint functions movement and maneuver and sustainment.

In relation to airland delivery, airdrop delivery has several disadvantages. It carries an increased risk of injury to personnel or damage to cargo. It requires special training for the riggers, transported personnel, and the aircrews. It can limit allowable

cabin load utilization substantially because of the special rigging required for airdropped materiel.

Planning airlift operations is a complicated process.

This responsibility includes performing and arranging to: bring units and materiel to departure terminals; prepare those resources for air movement; provide support services (meals, medical, billeting, and other appropriate services) to transient and arriving units; receive and transport units and materiel from arrival terminals; and prepare all manifests, movement documents, and reports related to the actual movement.

Air Refueling

AR allows air assets to rapidly reach any trouble spot around the world with less dependence on forward staging bases. Furthermore, AR significantly expands the force options available to a commander by increasing the range, payload, loiter time, and flexibility of other aircraft.

Air refueling Operations

Intertheater AR supports the long-range movement of combat and combat support aircraft between theaters. Intertheater AR operations also support global strike missions and airlift assets in an air bridge. AR enables deploying aircraft to fly nonstop to their destination, reducing closure time.

Intratheater AR supports operations within a GCC's AOR by extending the range, payload, and endurance of combat and combat support assets. Both theater-assigned and USTRANSCOM-assigned AR aircraft can perform these operations.

Air Refueling Missions

AR is a critical force multiplier across the full range of global and theater employment scenarios. Tankers directly enhance the operational flexibility of US and allied/coalition strike, support, and surveillance aircraft. AR missions represent the broad, fundamental, and continuing activities of the AR system.

AR significantly increases the range and endurance of bomber aircraft, directly enhancing

their flexibility to strike at distant targets and maximizing their operational utility for warfighter mission requirements.

An air bridge creates air lines of communications linking CONUS and a theater, or any two theaters. AR makes possible accelerated air bridge operations since en route refueling stops for receivers are reduced or eliminated.

CONCLUSION

This publication provides fundamental principles and guidance for planning, employing, and assessing air mobility operations across the range of military operations.

CHAPTER I
GENERAL OVERVIEW

"…our forces are in distant countries fighting organized terrorists who seek to destroy our nation and destabilize the world. Military operations in these austere places are challenged by the need to deploy and supply troops over great distances. Airlift is a precious lifeline that keeps them fed and equipped, brings the wounded home, and eventually, brings our forces home."

Former Congressman Jim Saxton, 4 April 2005

1. Introduction

Air mobility is the rapid movement of personnel, materiel, and forces to and from, or within, a theater by air. This includes both airlift and air refueling (AR). The air mobility network combines airlift, AR, aeromedical evacuation (AE), and air mobility support assets, processes, and procedures to support the transport of personnel and materiel. Air mobility operations are a rapid means to project and sustain power across the globe in support of US national interests and a critical enabler of US national military strategy. The Secretary of Defense (SecDef) directs the assignment of air mobility forces to the Commander, United States Transportation Command (CDRUSTRANSCOM), and other combatant commanders (CCDRs). To deter threats against, or to assist in the defense or pursuit of, US national interests, the Department of Defense (DOD) maintains forces, organizations, and processes necessary to conduct air mobility operations. The United States Air Force (USAF) programs the air mobility forces assigned to United States Transportation Command (USTRANSCOM), while USTRANSCOM manages the Defense Transportation System (DTS) and serves as the Joint Deployment and Distribution Coordinator (JDDC). As the JDDC, CDRUSTRANSCOM exercises coordinating authority for joint deployment and distribution enterprise (JDDE) operations and planning and collaborates with other combatant commands (CCMDs), the Services, and, as directed, United States Government (USG) departments and agencies. USTRANSCOM maintains the global capability for rapid and decisive military force power projection and to coordinate, sustain, and improve DOD distribution processes. This includes coordinating the capability to transport units, equipment, and initial sustainment from the point of origin to the point of need and provides JDDE resources to augment or support operational movement requirements of the joint force commander (JFC). Rapid global mobility is the timely movement, positioning, and sustainment of military forces and capabilities across the range of military operations. Air mobility enables commanders to simultaneously execute the joint functions of movement and maneuver and sustainment at the strategic, operational, and tactical levels of warfare.

2. Deployment

Deployment is the movement of forces into operational areas (OAs) or the relocation of forces and materiel within OAs. Deployment encompasses all activities from origin or home station through destination, specifically including intracontinental US, intertheater, and intratheater movement legs, staging, and holding areas. If these operations must occur

in a higher threat environment, tactics, escort requirements, and objective area support requirements could reduce the throughput of the overall air mobility system and limit airlift capacity or AR offload amounts. Commanders and planners should also consider the backhaul capacity of the air mobility forces. Using this capacity for rearward movement of personnel, patients, materiel, and reparable items or the repositioning or redeployment of units can save additional missions from being scheduled or diverted.

Deployment and redeployment are covered in detail in Joint Publication (JP) 3-35, Deployment and Redeployment Operations.

3. Air Mobility Forces Employment Missions

Air mobility forces conduct employment missions when they airlift units, cargo, or personnel; offload fuel in ground operations; or refuel aircraft during operations. Airlift forces can move combat-loaded units to maximize their readiness for immediate combat operations. Given the assumption of immediate combat, user requirements should dictate scheduling and load planning. However, the threat or peculiarities of large-scale operations may dictate adjustments to the user's plans or operations to accommodate the allowable cabin load (ACL) limitations, tactical procedures, and defensive support requirements of the airlift force. AR missions also primarily serve combat air assets directly engaging in combat operations. Fuel loads, flight profiles, and orbits should be determined by combat aircraft requirements. Threats may dictate modifications to the optimum plan to protect these limited resources. All air mobility forces can support surge employment operations during the initial stages of a conflict or when required. Commanders should consider the impact that surge operations would have on sustainment and force extraction missions. Backhaul is difficult during this type of mission, as the situation typically limits ground and loiter times and should be limited except for the rearward movement of essential personnel, wounded personnel, or other friendly evacuees.

4. Movement and Maneuver

a. Rapid global mobility uniquely contributes to movement and maneuver. Air mobility forces enhance other forces' combat power and flexibility, either by extending their range, bolstering their staying power, or providing them with greater maneuverability. Airlift allows deployment of critical early entry force packages over strategic distances without delays caused by terrain or obstacles. AR extends the range and expedites the arrival of self-deploying aircraft, precluding the need for intermediate staging bases. Airlift and airdrop capabilities allow shifting, regrouping, or movement of joint forces in a theater to gain operational reach and positional advantage.

b. Redeployment air mobility operations involve air movement of personnel, units, and materiel from deployed positions within or between an area of responsibility (AOR) and joint operations area (JOA).

c. Withdrawal operations involve combat air movement of personnel, units, and materiel from positions in the immediate vicinity of the threat. The purpose of these movements may range from withdrawal operations to lateral movement of forces to new

operating locations. These operations generally are planned to accomplish a movement with the minimum expenditure of air mobility 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, commanders should provide suitable operational assets to protect both the forces being extracted and the air mobility forces conducting their movement.

5. Sustainment

a. Routine sustainment air mobility missions involve movement of materiel and personnel to reinforce or resupply forces already deployed or employed in operations. Routine sustainment missions also include missions flown in support of military and nonmilitary organizations involved in humanitarian relief operations. These operations normally deliver requirements with the minimum expenditure of air mobility resources. Routine sustainment planning usually assumes user requirements and the general air and ground security situation allow some flexibility in the actual delivery times of specific loads. Flight schedules and load plans are made to maximize throughput from available ACLs and support resources. However, when sustainment channels are operated as part of an integrated, end-to-end distribution process, time-definite delivery (TDD) and interoperable load configurations may drive schedules and load plans. When practical, routine sustainment should be planned to utilize backhaul capacity. Depending on theater and user priorities, typical backhaul loads might include other friendly evacuees, enemy prisoners of war, excess or repairable weapons, and materiel of moderate to high value. In some cases, retrograde movements of repairable items must be planned and executed with the same TDD discipline as sustainment movements to ensure timely return of items to repair facilities.

b. Combat sustainment air mobility operations involve movement of supplies, materiel, and personnel to reinforce or resupply units already engaged in combat. Combat sustainment planning usually assumes requirements and threat situations limit flexibility of delivery times, locations, and configurations of specific loads. Flight schedules and load plans are usually driven by combat requirements rather than to maximize utilization of ACLs.

6. Air Mobility Fundamentals

a. **Airlift Delivery Methods.** There are two basic methods of delivery: airland and airdrop. The delivery method is based on user requirements, type of environment, availability, adequacy, security of airfields, landing zones (LZs), and drop zones (DZs) near the objective area, threats to the objective area, and aircraft/aircrew capability.

(1) Airland is the most frequently used airlift delivery method. It permits delivery of larger loads with less risk of cargo loss or damage than the airdrop method. Airland encompasses all situations where personnel and cargo are offloaded while the aircraft is on

the ground or, in the case of vertical takeoff and landing aircraft, after it has entered a hover. Although crews normally accomplish offloading from a stationary aircraft with engines shut down, procedures exist to onload or offload with engines running. In situations where the aircrew elects to not shut down engines (e.g., minimum ground time due to high threat, limited ground support), combat offload procedures can be utilized.

(2) Airdrop includes all methods of delivering personnel, equipment, and supplies from an airborne aircraft. This enables commanders to project combat power into areas lacking suitable or secure airfields. Airdrops are an alternative when using an uncontaminated aircraft to deliver mission critical cargo into a chemical, biological, radiological, and nuclear (CBRN) environment; however, the level of airborne contaminants may dictate the aircraft be quarantined and decontaminated upon mission completion. Airdrop enables commanders to capitalize on the element of surprise because of the speed of delivery and the vast number of potential objective areas for the employment of forces. However, the additional weight and space required for parachute rigging and cushioning material reduces the amount of cargo or personnel each aircraft can deliver. The most common means of rigging equipment and supplies for airdrop are the heavy equipment method, container delivery system (CDS), and door bundles. Precision-guided rigging equipment should be considered for combat troops operating in austere locations.

The various tactics, techniques, and procedures (TTP) associated with each delivery method are discussed in Chapter V, "Airlift."

b. **AR.** AR is an integral part of US air operations. It significantly expands deployment, employment, and redeployment options available by increasing the range, payload, and flexibility of air forces. AR is an essential capability in conducting air operations worldwide and is especially important when overseas basing is limited or not available. Receiver requirements and tanker availability dictate how much fuel can be offloaded, where the refueling will take place, and when the rendezvous (RV) will occur. The receiver aircraft's performance characteristics will dictate AR speed, altitude, and allowable maneuvering during the refueling.

(1) **AR Anchors and Tracks.** AR is normally conducted in one of two types of airspace: an anchor area or along an AR track. A detailed discussion of tracks and anchors is contained in Chapter VI, "Air Refueling."

(2) **AR Systems.** AR is conducted using one of two systems: boom or drogue. Most USAF and some allied aircraft use boom refueling. United States Navy (USN), United States Marine Corps (USMC), USAF, and US Army special operations refuelable rotary-wing aircraft; USAF special operations tiltrotor aircraft; and most allied aircraft use drogue refueling. All KC-10s and a small number of KC-135s can also be refueled in-flight. The USN has a limited, organic aerial refueling capability using tactical aircraft (e.g., F/A-18 equipped with aerial refueling system) and also utilize contracted AR support (Omega Air). While the USMC has organic KC-130 AR aircraft, these platforms are dedicated and direct support to Marine air-ground task force (MAGTF) operations. Marine KC-130s are not considered strategic or national assets.

(a) In boom refueling, the tanker aircraft inserts its AR boom into the receiver aircraft's AR receptacle. Boom refueling allows for the rapid transfer of fuel under high pressure to the receiver. This is especially important when passing large quantities of fuel to either large receiver aircraft or multiple fighter-type aircraft.

(b) In drogue refueling, a hose and basket system is reeled into the air by the tanker aircraft. Receiver aircraft then "plug" the basket with an external probe. Due to hose limitations, fuel transfer during drogue refueling is slower than boom refueling. KC-135 tanker aircraft must have the drogue assembly mounted on the boom prior to flight, and are thus limited to drogue-only refueling while airborne. Therefore, once airborne, most KC-135s can only perform one type of refueling at a time. KC-10 refueling aircraft are equipped with a centerline drogue and an AR boom. They can also be equipped with wingtip AR pods to expand their drogue refueling capability. They can refuel via both methods on the same mission although they cannot do this simultaneously. Additionally, there are a limited number of KC-135 aircraft in the inventory that can be equipped with external wing-mounted pods to conduct drogue AR while still maintaining boom AR capability on the same mission. As noted above, this cannot be accomplished simultaneously. In certain scenarios, this dual refueling capability makes KC-10s and KC-135s with multipoint refueling systems ideal for use as ground alert aircraft. The USAF special operations MC-130 is capable of providing dedicated drogue refueling to rotary-wing and tiltrotor special operations aircraft or conventional aircraft in support of special operations missions. Detailed discussions of AR operations, missions, and planning are discussed in Chapter VI, "Air Refueling."

c. The AE system provides time-sensitive (TS) en route care of casualties to and between medical treatment facilities (MTFs) using organic and/or contracted aircraft with medical aircrew trained explicitly for this mission. AE forces can operate as far forward as aircraft are able to conduct air operations in all operating environments. Specialty medical teams may be assigned to work with the AE aircrew to support patients requiring more intensive en route care.

d. **Scheduling Categories.** For scheduling purposes, air mobility missions are 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 Global Air Mobility Support System (GAMSS) assets. Surge operations allow for rapid and substantial movement of cargo and personnel because a large number of assets are committed toward the operation but can only be sustained for a short time. Surge operations may disrupt the efficiency of the National Air Mobility System (NAMS), require significant regeneration time, and complicate interactions of intertheater and intratheater forces. Geographic combatant commanders (GCCs) request intertheater airlift in support of deployment, sustainment, and redeployment operations through the Adaptive Planning and Execution (APEX) enterprise and Joint Operation Planning and Execution System (JOPES) process. GCCs, in coordination with supporting commanders and Services, establish movement requirements and develop time-phased force and deployment data (TPFDD) in APEX/JOPES. USTRANSCOM, in turn, reviews the movement requirements in the TPFDD and validates those requirements (which includes mode of transportation) and forwards the tasking to its appropriate Service component(s) for movement. Intertheater

airlift sustainment involves movement of replacement supplies, equipment, and personnel. Users requiring AR support submit their requests through the Air Refueling Management System for validation and support through the theater's air operations center (AOC)/air mobility division (AMD) or USTRANSCOM.

Detailed procedures are outlined in JP 3-35, Deployment and Redeployment Operations.

e. **Air Mobility Mission Categories.** There are various categories of missions flown.

(1) AE missions support the movement of patients with qualified aeromedical air crew members (including civilian specialists with approval), may require special air traffic control (ATC) considerations to comply with patient-driven altitude and pressurization restrictions, and utilize medical equipment approved for use on aircraft systems.

(2) Channel airlift missions provide common-user airlift service on a scheduled basis between two or more predesignated points. Channel airlift missions support passenger and cargo movement over established worldwide routes (CCMD- or Service-validated) that are served by scheduled DOD aircraft under the Air Mobility Command (AMC) or under the control of a GCC's AOC/AMD. USTRANSCOM also conducts channel missions via contracted and scheduled commercial aircraft. The vast majority of airlift sustainment will move on either distribution or contingency channel missions. Distribution channel missions are volume–driven, in which airlift is regularly scheduled against the volume of cargo moving through an aerial port of embarkation (APOE). Contingency channel missions support specific operations and fly on an as-needed schedule based on cargo and passenger movement requirements from/to the predesignated points of the channel. Distribution and contingency channels are structured such that there



United States Marine Corps F-18 receiver aircraft using drogue air refueling system

can be flexibility in adding airlift to accommodate surges in volume of cargo. Both types of channel users reimburse the Transportation Working Capital Fund (TWCF) based on weight/cube of cargo or a designated cost per passenger. In many cases, channel missions operate as part of an integrated or linked set of movements from point of origin to point of need to consistently deliver requested logistics support when and where the customer requires. USTRANSCOM, in collaboration with supported CCDRs, establishes TDD goals and parameters that are key to successful warfighter support. These TDD goals and parameters can act as indicators of channel performance. JP 4-01, *The Defense Transportation System*, provides further details on channel airlift.

(3) Special assignment airlift missions (SAAMs) are airlift missions that are bought by a user to satisfy one or more validated requirements. SAAMs support DOD users, as well as other government agencies such as the US Secret Service, Federal Bureau of Investigation, and Drug Enforcement Administration.

(4) A Coronet mission is a movement of air assets, usually fighter aircraft, in support of contingencies, rotations, and exercises or aircraft movements for logistics purposes. The tanker aircraft in a Coronet mission provides fuel to avoid intermediate stops and provides weather avoidance, oceanic navigation, communication, and command and control (C2) of the mission.

(5) Contingency missions operate in direct support of an operation order (OPORD) in which movement requirements are identified in the appropriate TPFDD in APEX/JOPES.

(6) Chairman of the Joint Chiefs of Staff (CJCS) exercise missions operate in support of CJCS-directed or sponsored exercises. These movement requirements are also identified in a TPFDD.

(7) AR missions provide in-flight refueling to users; for example, foreign military sales, aircraft transfers, and unit moves.

(8) Training missions are flown for crew currency and proficiency for airlift, AR and AE. A specific type of training mission is the joint airborne and air transportability training (JA/ATT) mission. JA/ATT missions are a joint effort between air mobility units and other DOD agencies to provide training for both. JA/ATT missions are part of a Joint Chiefs of Staff (JCS)-directed, AMC-managed, or theater USAF component command-managed program that provides basic airborne and combat airlift continuation and proficiency training conducted in support of DOD agencies. These missions include airdrop, air assault, aircraft load training, AR, and Service school support.

(9) Intratheater common-user airlift missions provide routine, and TS mission-critical (MC), support to the GCC and are missions flown by theater airlift aircraft to support common-user theater movement requirements.

7. Global Mobility Enterprise

The global mobility enterprise (GME) is an integrated series of nodes that support air mobility operations. The four components of the enterprise consist of Airmen, equipment, infrastructure, and C2. The GME optimizes the capacity and velocity of the air mobility system to support the CCDRs. The enterprise requires global situational awareness through collaboration, coordinated operations, and adherence to air mobility processes.

a. **NAMS Functions.** The mobility air forces (MAF) are those forces assigned to CCMDs that provide rapid global mobility and conduct air mobility operations. The MAF's four core capabilities are airlift, AR, air mobility support/GAMSS, and AE.

(1) Airlift is the movement of personnel and materiel via air mobility forces to support strategic, operational, and tactical objectives. These forces provide common-user airlift between or within theaters. Delivery to destination can be done via airland or airdrop methods.

(2) AR is the in-flight transfer of fuel from an air mobility aircraft to a receiver(s) in support of strategic, operational, and tactical objectives.

(3) Air mobility support is the capability of providing responsive C2 and ground support to air mobility forces worldwide. This capability is provided by a limited number of permanent en route support locations and deployable forces capable of augmenting the fixed en route locations or establishing new en route locations which is known as the GAMSS.

(4) AE is the movement of regulated patients between medical facilities by air mobility assets or contracted commercial aircraft. AE patients are airlifted using organic and/or contracted aircraft with medical aircrew trained explicitly for this mission. AE is further discussed in JP 4-02, *Joint Health Services.*

b. **NAMS Forces.** NAMS consists of forces that perform intertheater, intratheater, and organic mobility operations. USTRANSCOM and the GCCs possess air mobility assets that are capable of performing both intertheater and intratheater operations. Each Service also possesses some organic air mobility capability.

(1) Conventional air mobility forces under combatant command (command authority) (COCOM) of either CDRUSTRANSCOM or the GCCs provide common-user assets to conduct operations between or within theaters.

(2) The bulk of intertheater air mobility operations are conducted in response to requests from the CCMDs and Services in accordance with (IAW) guidelines set by the President and SecDef. AMC, as the USAF component of USTRANSCOM, is capable of conducting and controlling intertheater air mobility operations across the globe.

(a) The GAMSS is comprised of a limited number of permanent en route support locations plus expeditionary forces that deploy under the global reach laydown plan. Permanent en route support locations are manned to handle day-to-day peacetime operations. Deployable GAMSS forces can be tailored to augment permanent locations during large-

scale contingencies or to establish en route support at new locations where this support does not exist. GAMSS forces enable USTRANSCOM to establish a network of support locations (terminals) linked together by air lines of communications (ALOCs) to create an air bridge. GAMSS forces, by augmenting permanent terminals or establishing new ones, enable airlift aircraft to move personnel, equipment, and supplies to the desired location. Airlift, AR, and GAMSS forces are limited assets; therefore, their use requires detailed and coordinated planning to meet validated requirements.

(b) The AMC's 618th Air Operations Center (Tanker Airlift Control Center) (618 AOC [TACC]) is the C2 node for all USTRANSCOM air mobility missions. Specifically, the 618 AOC (TACC) receives validated common-user requests; tasks the appropriate unit; plans the mission; and provides continuous communications connectivity between intertheater forces, the common-user, and supporting GAMSS forces.

(c) Air Mobility Liaison Officers (AMLOs). The principal purpose of the AMLO program is to facilitate joint operations integration between air and ground component commanders (CCs) and their agencies during all phases of joint air movement and maneuver, and sustainment operations.

(3) Intratheater air mobility forces under the COCOM of designated GCCs, or the operational control (OPCON) or tactical control (TACON) of designated subordinate commanders, provide two types of support. General support is provided through a common-user airlift service to conduct operations within the theater or JOA in response to JFCs' movement priorities. Direct support may be provided with Service-organic transportation assets in a combat zone IAW the Service CC's priorities or one Service component may be tasked to provide direct support to another Service CC or subordinate commander. Intratheater air mobility operations are directed by CCDRs or designated subordinate commanders to meet theater operational and tactical requirements. GCC's can execute intertheater operations using their assigned and attached air mobility forces to meet the JFCs time, place, and mission-sensitive needs and requirements. Each GCC has also established a joint deployment and distribution operations center (JDDOC), which is patterned after the USTRANSCOM Deployment and Distribution Operations Center (DDOC). The JDDOC mission is to support the GCC's operational objectives by synchronizing and optimizing strategic and multi-modal resources to maximize force deployment, distribution, and sustainment. Its objective is to maximize GCC combat effectiveness through improved end-to-end distribution and asset visibility. During contingencies, a theater direct delivery, intertheater mission under USTRANSCOM's control could be redirected to another location instead of its scheduled aerial port of debarkation (APOD) due to the dynamics (e.g., threats) in a JOA. In these scenarios, the GCC, through the AOC/AMD, is normally responsible for the GAMSS's transload of resources from an intertheater asset to an intratheater asset and the forward movement of the resources to the final APOD. Interaction between MAF C2 agencies is critical during all intertheater and intratheater operations and can only be supported by specific C2 arrangements and MAF apportionment both prior to and after a joint task force (JTF) has been established.

See JP 3-30, Command and Control of Joint Air Operations.

(a) Common-user intratheater movements are usually controlled through a theater-specific C2 node, and requirements are met using theater-assigned/attached forces. In United States European Command (USEUCOM), United States Central Command (USCENTCOM), United States Southern Command (USSOUTHCOM), United States Indo-Pacific Command (USINDOPACOM), United States Northern Command (USNORTHCOM), and United States Africa Command (USAFRICOM), this node is an AMD within the joint air operations center (JAOC). The AMD functions are similar to those of the 618 AOC (TACC). The AMD's theater focus is critical in teaming with the JDDOC or joint movement center (JMC) to coordinate and prioritize the phasing of intertheater and intratheater airlift requirements. The AMD has vast theater expertise and familiarity and is best able to assess theater requirements, allocate forces to meet those requirements, initiate requests for additional forces through the request for forces process, or seek additional USTRANSCOM support by other means. Intertheater missions are typically flown to major airfields (terminals) often referred to as "hubs." From these hubs, transported personnel or cargo is distributed by intratheater forces to other terminals, referred to as "spokes" within the JFC's OA. Chapter V, "Airlift," provides more details on hub and spoke operations.

(b) Alternatively, when a JTF is established, intratheater movements may be controlled through a JTF-specific C2 node that interfaces with the JDDOC/JMC, JAOC's AMD, and 618 AOC (TACC). The JTF-specific C2 node could be a joint, combined, or component AOC as specified by the commander, joint task force (CJTF).

(c) When requirements exceed the capability of assigned or attached forces, JTF air mobility capabilities may be augmented. The supported CCDR may attach additional theater-assigned forces to the CJTF. SecDef may attach USTRANSCOM forces to the supported CCDR, or JFC; USTRANSCOM may support the CCDR by making air mobility capabilities available as a supporting CCDR. Regardless of the source, intratheater, common-user air mobility forces assigned, attached, or made available to a subordinate joint force should be organized under a commander, Air Force forces (COMAFFOR), as appropriate and directed by the JAOC for optimum efficiency and effectiveness. The COMAFFOR, joint force air component commander (JFACC) (if designated), and the director of mobility forces (DIRMOBFOR) must ensure conventional intratheater air mobility forces are organized to properly interact with other intratheater and intertheater forces.

(4) Organic air mobility forces primarily provide specialized airlift and AR to Service users. Normally, these forces exist as elements of Service or functional component aviation arms and are assigned directly to their primary user organizations. These forces, if assigned to a CCMD, operate under the COCOM of that CCDR. While these forces are not under the control of the USAF CC, their capabilities and resources should be identified and operations visible to the 618 AOC (TACC); AMD; and, for a GCC, the JDDOC or a JMC, which may be established at a subordinate unified or JTF level to support the concept of operations (CONOPS) and COMAFFOR. In special circumstances under the latter case, these forces may be utilized to augment intratheater forces and accomplish tasks on behalf of their Service or made available for common-user tasking.

c. **NAMS Components.** The NAMS draws its forces and capabilities from both the civil and military air mobility components. Forces and capabilities apportioned to USTRANSCOM, geographic CCMDs, and the Services are determined by each organization's requirements for the specialized contributions of each NAMS component. Each component contributes unique capabilities, such as airlifting outsized or oversized cargo or AR other aircraft, or contributes greater efficiencies, such as passenger or small cargo express delivery, that collectively give the NAMS its overall ability to meet the Nation's needs.

(1) The civil component of the NAMS is increasingly called upon to accomplish various air mobility operations. It is therefore prudent for all DOD components of NAMS to maximize their ability to accommodate civil components within the system. The civil component is comprised of civilian airlift carriers who have signed up as members of the Civil Reserve Air Fleet (CRAF). The CRAF is a voluntary contractual program where civil carriers agree to augment military airlift during a crisis in exchange for peacetime defense business. During peacetime, regional contingencies, and major exercises, CRAF carriers voluntarily contract to fulfill personnel and cargo movement requirements. CRAF carriers are contracted daily to fly various categories of airlift, to include channel airlift, SAAMs, exercise support, contingency support, and charter airlift. This augmentation is crucial to all common-users since it allows USTRANSCOM to continue to meet routine scheduled and surge commitments simultaneously. When needed, carriers participating in the CRAF program can be activated in one of three stages with each stage providing greater airlift capacity. These stages include Stage I—Committed Expansion (Regional Crisis or Small-Scale Contingency), Stage II—Defense Airlift Emergency (Major Theater War), and Stage III—National Emergency (Multiple Theater Wars and National Mobilization). CDRUSTRANSCOM, with SecDef approval, is the activation authority for each stage of CRAF. DOD tasks the minimum percentage of assets in each stage necessary to augment military airlift to meet crisis requirements. During activation, USTRANSCOM, in coordination with the civil carriers, exercises mission control over the civil aircraft. CRAF carriers are generally not subject to the same host nation (HN) diplomatic clearance procedures as DOD military aircraft. When necessary and authorized, foreign flag carriers may augment US air carriers.

(2) Commanders and their staffs should be aware that the CRAF may not conduct operations into an airbase that is under attack or contaminated at the time of arrival. Further information regarding joint operations under CBRN threat conditions is available in JP 3-11, *Operations in Chemical, Biological, Radiological, and Nuclear Environments,* and AMC Pamphlet 10-260, *Civil Reserve Air Fleet (CRAF) Aircrew Chemical-Biological (CB) Warfare Defense Procedures.*

(3) **Additional Contracted Capabilities**

(a) **Tenders.** AMC and Military Surface Deployment and Distribution Command have standardized freight tenders for most modes of transportation. The tender structure allows for companies participating in CRAF the freedom to carry cargo internally or via subcontractors, a practice known as CRAF Prime. Tenders offer many advantages. These include less than full-planeload movement flexibility, lower overall airlift costs,

enhanced economic development (in line with national airlift policy), and swift redeployment. Tender companies also cover beddown and aircrew issues and they enjoy faster overflight clearance processing since they are not usually required to undergo extensive diplomatic clearance procedures. Furthermore, the use of civilian aircraft for military means usually lowers the overall theater presence of the military airlift effort.

(b) **Air Mobility Express (AMX).** At the request of the supported CCDR, CDRUSTRANSCOM can establish a special channel mission called AMX to move critically needed items rapidly to an AOR. The supported CCDR may apportion part of the CJCS-allocated lift on AMX by pallet positions to each component. For AMX missions to be effective, the supported CCDR should establish a theater distribution system to deliver express cargo from APODs to final destination.

(c) **Theater Express (THX).** Under this construct, GCCs contract commercial air cargo companies to move intratheater cargo in single-pallet increments. The THX program is advantageous because it uses civilian aircraft, personnel, and infrastructure to facilitate expeditious movement and use local businesses. It is cost effective, because each offering is bid competitively between all authorized carriers, and payment is based solely on weight versus contracting an entire aircraft. Therefore, the benefits of THX are multi-fold: the burden on organic airlift and facilities is reduced, costs are contained and easily and discretely tracked, local businesses are used in pursuing US goals, and fewer airmen have to be deployed to build up capacity quickly. Furthermore, contracting by the pallet gives commercial carriers the capability to blend their commercial and military freight, resulting in economies of scale and lower costs.

(4) The military component of NAMS is comprised of active and reserve components of the USAF and organic lift assets in the Army, USN, and USMC.

(a) **Active USAF component forces conduct routine and contingency air mobility missions in support of all common-user requirements worldwide.** Commanders have full access to these forces, and they are continuously available for immediate worldwide tasking. Most continental United States (CONUS)-based active duty air mobility forces are under COCOM of CDRUSTRANSCOM and, in turn, OPCON of CDRUSTRANSCOM's USAF component, AMC. Similarly, most conventional theater-based active duty air mobility forces are under COCOM of their GCC (e.g., Commander, USEUCOM) and, in turn, under OPCON of their respective USAF component (e.g., Commander, US Air Forces, Europe).

(b) **Air Force Reserve Command (AFRC) and the Air National Guard (ANG) provide vital airlift, AR, AE, and air mobility support capabilities to NAMS.** Their forces possess the same capabilities as active duty forces and, in some cases, unique capabilities not found in the active force (e.g., LC-130). They complement active duty forces during peacetime through a volunteer system. During contingencies or other national emergencies, where requirements exceed the capability gained by volunteerism, these forces may be brought to active duty status either by federalizing guard forces or activating reserve forces. Approximately 50 percent of the air mobility capabilities are resident in AFRC and

ANG. AFRC and ANG personnel are experienced operators and train to the same standards as their active duty counterparts.

(c) The Navy Reserve conducts vital routine and contingency air mobility and limited AE and provides support that is unique to naval fleet operations to NAMS. This is a unique capability within the Navy Reserve that does not exist in the active force, though they support the active force fleet. This capability is known as Navy-unique fleet essential airlift and is designed for intratheater airlift support by linking the APOD to the final fleet logistics support point for carrier onboard delivery, vertical onboard delivery, or shipping supply. Composed of support in peacetime through a volunteer system, during contingencies or other national emergencies where requirements exceed the capability gained by volunteerism, these forces may be brought to active duty status by activating the Navy Reserve forces. All of the Navy's air mobility capabilities are resident in the Navy Reserve. Navy Reserve personnel are experienced operators and train to the same standards as counterparts in other Services.

(d) Active and Reserve USMC forces conduct vital airlift, AR, AE, and air mobility support that is unique to MAGTF requirements. USMC forces require common-user airlift when deploying into a theater as part of either a maritime pre-positioning force MAGTF or as an air contingency MAGTF. During maritime pre-positioning force operations, USMC forces are airlifted to join maritime pre-positioned equipment and supplies at the arrival and assembly area. Additional fly-in echelons of personnel, equipment, and supplies are airlifted into the theater to complete and sustain the force. The air contingency MAGTF requires intertheater airlift of both personnel and equipment. Depending on the mission, amphibious MAGTF operations ashore may require intertheater and intratheater common-user airlift support to sustain and/or support the force.

Reserve component mobilization is addressed in JP 4-05, Joint Mobilization Planning.

d. **Air Mobility Operations Considerations**

(1) To maximize air mobility effectiveness and efficiency, users and providers should carefully plan and coordinate its employment. Its flexibility and vulnerability make it a responsive, but potentially costly, asset to use. The flexibility of the NAMS may, however, be constrained by its logistic support requirements and its dependence on ground equipment for some operations (which may not be available in desired locations or configurations). Properly organized, trained, and equipped air mobility forces can usually be shifted rapidly between missions and terminals. For example, planes and crews dispersed on sustainment missions throughout an AOR can be concentrated for a large formation employment mission. Modern aircraft offer increased mission flexibility because they can be quickly reconfigured for a variety of loads (palletized and unpalletized cargo, rolling stock, passengers, AE, and airdrop loads) or different types of in-flight refueling missions.

(a) **Operating the air mobility force at its optimal capacity each day should not undermine its timely reaction to unforeseen emergencies or the shifting priorities of an operation or campaign.** Attempts to bank air mobility forces for later

missions are usually ill advised, because holding them in reserve entails the certain loss of irrecoverable daily transportation productivity.

(b) **Air mobility aircraft are vulnerable to air and surface attacks. Similarly, GAMSS units and command elements are organized to provide only for their local security.** These vulnerabilities usually mean that optimal air mobility operations are most effective in a low-threat environment. Ideally, friendly air defense forces should protect large-scale or high-frequency operations. Air mobility forces can operate in higher threat environments by using aircraft equipped with defensive systems; by using other assets to protect them; or by accepting a possible combination of operational risk, higher loss rates, and reduced efficiency.

Further information regarding local security is available in JP 3-10, Joint Security Operations in Theater.

(c) When CBRN contamination affects airfield operations, an important contamination control measure available to air mobility planners is use of the exchange zone (EZ) concept. An EZ is a transload base, located beyond the CBRN-threat area, for the transfer of cargo and passengers between uncontaminated (clean) aircraft and previously contaminated (dirty) aircraft. From the EZ, the dirty aircraft shuttle to and from the contaminated APOD to continue TPFDD deliveries. EZ minimizes the number of air mobility aircraft exposed to contaminants and enables continued use of CRAF aircraft when APODs have been contaminated. Further information regarding EZ is found in the *Air Mobility Command Counter-Chemical, Biological, Radiological, and Nuclear Concept of Operations.*

(d) Split mission-oriented protective posture (MOPP) is a protection measure that can be used under certain conditions (e.g., split MOPP operations must take into consideration wind shifts). Air mobility planners use split MOPP to divide an APOD into clean and dirty sectors, allowing a MOPP reduction in the uncontaminated sectors. If airlift operations must continue into a contaminated airfield, look for clean sections of the runway and/or ramp (upwind of the contaminated sectors) for the conduct of on/offload activities. The contingency response element (CRE) officer in charge at the contaminated airfield should direct the aircrew to clean sectors during ground operations.

(e) CBRN decontamination activities may help sustain military operations in CBRN-contaminated environments by preventing or minimizing mission performance degradation, casualties, or loss of resources. Prior to implementing decontamination activities, the value of these efforts should be assessed based on the objective (e.g., if the installation started in MOPP 4 and will be in MOPP 4 at the end of the decontamination operation, were decontamination activities the best use of resources). In addition, there are levels of decontamination up to, and including, verification that the asset is deemed uncontaminated and safe for unlimited use.

Further information regarding split MOPP and decontamination is available in the Air Mobility Command Counter-Chemical, Biological, Radiological, and Nuclear Concept of

Operations; *JP 3-11,* Operations in Chemical, Biological, Radiological, and Nuclear Environments; *and JP 3-41,* Chemical, Biological, Radiological, and Nuclear Response.

(2) **The Phoenix Raven program is designed to ensure adequate protection for air mobility aircraft transiting airfields where security is unknown or deemed inadequate to counter local threats.** AMC Phoenix Raven teams will deter, detect, and counter threats to personnel and aircraft by performing close-in aircraft security, advising aircrews on force protection measures, accomplishing airfield assessments to document existing security measures and vulnerabilities, and assisting aircrew members in the performance of their duties when not performing Phoenix Raven duties. Phoenix Raven teams should be considered for all missions that transit high-risk areas. It should be noted that these are limited resources. Therefore, assigning a fly-away security team may be an alternative option if Phoenix Raven teams are unavailable.

(3) **Limited air mobility forces may not be able to fill all demands placed on them. The scarcity of air mobility 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.** Effective and well-coordinated allocation of these assets requires careful prioritization, especially in the face of changing mission requirements. This becomes crucial when distances are long or in the absence of a well-developed surface infrastructure. When time is critical, airlift may be the only choice to ensure the success of high-priority missions. The central problem of theater planning is maximizing air mobility operations for immediate requirements, while also maximizing their contribution to the long-term requirements of the overall operation or campaign. Planners and operators should weigh the immediate needs of the user against the overall requirements and priorities of the JFC. **As a general guideline, air mobility forces should not be tasked for movements when surface assets meet shipment requirements.**

(4) **The operational and logistic characteristics of air mobility forces require commanders to:**

(a) Establish priorities for the air mobility effort that reflect national priorities and the CONOPS and intent of the commanders they support.

(b) Monitor and assess air mobility capacity, usually expressed in tons or sorties, on a continual basis.

(c) Specifically task, properly support, and control air mobility forces to achieve desired objectives.

(d) Require air mobility forces to plan their specific missions and transmit required statistical data through the logistics and operational systems.

e. **Force Visibility.** Force visibility shows the current and accurate status of forces at the strategic and operational level, their current mission, future missions, location, mission priority, and readiness status. Force visibility provides information on the location, operational tempo, assets, and sustainment requirements of a force as part of an overall capability for a CCDR. Force visibility integrates operations and logistics information,

facilitates global force management, and enhances the capability of the entire joint planning and execution community (JPEC) to adapt rapidly to unforeseen events to respond and ensure capability delivery. Force visibility enhances situational awareness and is required to support force sourcing, allocation, and assignment of forces; force position; sustainment forecasting and delivery; and forecasting for future force requirements.

(1) **Asset Visibility (AV).** AV is a subcomponent of force visibility. AV provides the capability to determine the identity, location, and status of equipment and supplies by class of supply, nomenclature, and unit. It includes the ability to determine the status of personnel. It provides visibility over equipment maintenance and retrograde actions. It also includes the capability to act upon that information to improve the overall performance of the DOD logistic practices supporting operations. DOD-wide AV requires horizontal integration of supply and transportation activities and one-time data capture. AV includes in-process, in-storage, and in-transit visibility. The function of performing AV is a shared responsibility among deploying forces, supporting commands and agencies, USTRANSCOM, and the supported CCDR. The Defense Logistics Agency (as Executive Agent for Integrated Data Environment AV) and USTRANSCOM (with Integrated Data Environment/Global Transportation Network Convergence [IGC]) work collaboratively to ensure supply and in-transit data is shared and fused resulting in a complete seamless picture for end-users.

(2) **In-Transit Visibility (ITV).** ITV refers to the capability to track the identity, status, and location of DOD units and non-unit cargo (excluding bulk petroleum, oils, and lubricants [POL]), passengers, and personal property from origin to consignee or destination across the range of military operations as part of AV.

For more information on force visibility, AV, and ITV, see JP 3-35, Deployment and Redeployment Operations, *and JP 4-09,* Distribution Operations.

f. **Planning Considerations.** Common users directly benefit from understanding the air mobility infrastructure by becoming familiar with the airlift mission funding categories. The NAMS is impacted by several variables. For example, choosing the correct method of delivery, correctly determining whether requirements can best be served through routine or surge operations, and understanding the funding implications associated with each choice. These variables influence the type of support received by the requesting user. Therefore, users, when submitting their requests, must not only make their choices on an objective analysis of their exact needs but must also remain flexible as their desires must be balanced against the CJCS priority system and other common-user needs.

(1) **Mission Funding Categories.** Use of air mobility aircraft is funded either through the TWCF or operation and maintenance (O&M) funds. Users reimburse the TWCF upon completion of their movement of requirements by common-user air mobility forces. USTRANSCOM/AMC-assessed fees are based on the mission type supporting the user's movement. O&M funding occurs out of the Service component budget and, generally, there is no charge levied directly against the user. The various types of NAMS missions are designed and scheduled according to their funding category.

(a) **TWCF**

1. Channel airlift missions use O&M funds to reimburse the TWCF based on weight/cube of cargo and per passenger from APOE to APOD.

2. SAAM users reimburse TWCF at a SAAM rate based on mission flying time, to include positioning (originating station to required APOE) and repositioning (APOD to originating station) legs.

3. Contingency mission users reimburse the TWCF based on mission flying time, to include positioning and repositioning when directly supporting an OPORD, disaster, or emergency**.**

4. JCS Exercise mission users reimburse TWCF based on mission flying time, to include positioning and repositioning.

5. Intratheater common-user airlift missions flown on USAF airlift aircraft are paid for using contingency funding or the TWCF.

(b) **O&M Funded**

1. AR missions are executed with O&M funds; the cost of fuel transferred is charged to the serviced unit, including on dual-role missions.

2. Training missions flown for currency and proficiency are paid from O&M funds.

3. JA/ATT missions are paid by O&M funds that are specifically allocated for joint training that enhances the mutual readiness of both the aviation unit and the users.

4. Service-organic missions flown by Service-assigned assets (including other Air Force major commands [MAJCOMs]) to meet their own requirements are paid from Service/MAJCOM O&M funding.

5. Operational support airlift (OSA) missions are paid with O&M.

(2) **Air Mobility Infrastructure.** Each type of infrastructure has unique advantages and disadvantages that must be considered when planning air mobility operations.

(a) **ALOCs and Air Terminals.** Establishing ALOCs between air terminals is key to rapid global mobility. ALOCs are air routings connecting a military force with a base of operations that maximize load and fuel efficiencies for airlift, AR, and receiver aircraft, while providing a structure to the airflow. An effective ALOC structure rests on the proper mix of stage and air bridge operations. Stage operations (known to the air mobility community as “lily pad” operations) are typified as missions that originate from a CONUS terminal; delay en route at an intermediate location for refueling, crew stage,

and/or crew rest; and terminate at an outside the continental United States (OCONUS) terminal. Air bridge operations are defined as flights between theaters and AORs where the receiver aircraft's range is augmented by in-flight refueling on designated AR tracks. These established routings, air terminals, and AR tracks allow commanders to effectively and efficiently move and position aircraft, cargo, or personnel. Terminals serving ALOCs include ground-based locations where resources are either loaded or offloaded. AR tracks are a series of specified points (usually along a receiver's route of flight) where refueling and receiver aircraft conduct in-flight refueling operations. This applies to tankers refueling cargo aircraft, refueling bombers, or assisting in the movement of fighters as part of a deployment.

(b) **Aerial Port.** An aerial port is an airfield that has been designated for the sustained air movement of personnel and materiel, as well as an authorized port for entrance into or departure from the country where located. An airfield is an area prepared to accommodate transiting aircraft (to include any buildings, installations, and equipment). Some air mobility aircraft are capable of operating on unimproved surfaces, but, for large operations, it is more effective to establish APODs and APOEs on prepared airfields. Prepared airfields are usually preexisting facilities, with hard-surface runways, extensive ground operations areas (for taxiing, parking, cargo handling, and other appropriate uses), and support infrastructure required for sustained operations. These attributes usually make prepared airfields the best available locations for air mobility main bases and the best available terminal for deployment, redeployment, and large-scale employment operations. These attributes limit the number and location of these types of terminals. As a result, commanders should expect these terminals to be targeted by adversary forces.

(c) **LZ.** An LZ is any specified zone used for the landing of aircraft. 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 many cases, it is possible to find or construct them near the operating area of supported forces. A close-by, but less sophisticated, LZ may offer fewer delays in providing airland resupply to forward-deployed troops or assistance to humanitarian operations. Due to their isolation and possible proximity to threats, operating at these terminals requires significant planning.

(d) **DZ.** A DZ is a specific area upon which airborne troops, equipment, or supplies are airdropped. Although DZs are normally on relatively open, flat terrain, they may be situated on almost any site (including water) suited in size and shape for intact delivery and recovery of airdropped personnel and materiel. The main advantage of a DZ is the ability to deliver forces or materiel when an LZ or airfield cannot be constructed or used because of expense, time constraints, security risks, political sensitivities, or terrain. Similar to LZs, their isolation and possible proximity to threats makes security more difficult. Operations at DZs require significant planning because of limited on-ground support and likely threats to the aircraft and support personnel.

Detailed information on planning air mobility operations can be found in Chapter III, "Planning Air Mobility Operations."

CHAPTER II
COMMAND AND CONTROL OF AIR MOBILITY OPERATIONS

"The real excitement from running a successful airlift comes from seeing a dozen lines climbing on a dozen charts."

Major General (later Lieutenant General) William H. Tunner,
Combined Airlift Task Force Commander for the Berlin Airlift, 1948

1. General

The value of air mobility forces lies in their ability to exploit and enhance the speed, range, flexibility, and versatility inherent in air operations. Centralized control and decentralized execution of air mobility missions are the keys to effective and efficient air mobility operations. Centralized control allows commanders to focus on those priorities that lead to victory, while decentralized execution fosters initiative, situational responsiveness, and tactical flexibility. Although it is not necessary for a single global organization to centrally control all air mobility forces, all commanders should envision air mobility as a global system capable of simultaneously performing intertheater and intratheater missions. Separate but integrated command structures exercise centralized control over USTRANSCOM-assigned and theater-assigned and attached air mobility forces. This arrangement ensures a smooth interaction of the intertheater and intratheater forces.

a. Effective support of the supported CCDR's mobility requirements demands theater and CONUS-based forces form a mutual partnership. This partnership must operate as an integrated force with interoperable planning, tasking, scheduling, and C2 systems. A critical element of this partnership is linking centralized control agencies such as the CONUS-based forces' USTRANSCOM DDOC and the 618 AOC (TACC) to the theaters' JDDOCs and JAOCs. These MAF partners exercise centralized control to ensure the JFC is supported with responsive, capable, and seamless air mobility.

b. **Theater Air Control System (TACS).** TACS is the USAF mechanism for commanding and controlling theater air operations for the COMAFFOR. The AOC is the senior C2 element of TACS and includes personnel and equipment of the necessary disciplines to ensure effective control of air operations (e.g., communications, operations, intelligence).

Further details concerning the structure, functions, processes, and personnel within the AOC can be found in Air Force Tactics, Techniques, and Procedures (AFTTP) 3-3.AOC, Operational Employment-Air and Space Operations Center, *and Air Force Instruction 13-1AOC series publications.*

2. Command Relationships

Effective and efficient employment of air mobility forces requires a clear understanding of the associated command relationships and control processes affecting the

application of these forces. Because they may operate simultaneously across three environments—intertheater, intratheater, and within a JTF's JOA—C2 of air mobility forces can be a particularly complex task. Normally, USTRANSCOM forces remain under OPCON of CDRUSTRANSCOM when supporting missions in theater.

3. Command and Control

There are three independent C2 structures that, when integrated, constitute the global air mobility C2 system. They are the **intertheater, intratheater,** and **JTF systems.**

a. **Intertheater Air Mobility Operations.** Intertheater air mobility serves the CONUS-to-theater and theater-to-theater air mobility needs of the GCCs. Air mobility assets assigned to USTRANSCOM execute the majority of intertheater airlift missions. **C2 of these assets is normally exercised by AMC through Eighteenth Air Force (18 AF) Air Forces Transportation (AFTRANS) and through the 618 AOC (TACC).** 18 AF is the primary worldwide planning and execution agency for activities involving USTRANSCOM-assigned air mobility forces operating to fulfill CDRUSTRANSCOM-directed requirements. Theater-assigned forces may also conduct theater-to-theater air mobility operations. For intertheater air mobility operations, OPCON is normally retained by the CCDR who owns the forces. Specific command relationships for air mobility forces should be established in a manner that best supports the joint tasking and circumstances of the operation.

See JP 1, Doctrine for the Armed Forces of the United States, *for further discussion on command relationships. See the current* Global Force Management Implementation Guidance *for additional information on force assignment, allocation, and apportionment.*

b. **Intratheater Air Mobility Operations.** Intratheater air mobility operations are defined by geographic boundaries. Air mobility forces assigned or attached to the GCC normally conduct these operations. Intratheater common-user air mobility assets are normally scheduled and controlled by the theater AOC or JAOC if established. The ability to identify and coordinate movement requirements (visible in JDDE-common systems) is critical to providing theater reachback support from the 618 AOC (TACC). When intratheater air mobility requirements exceed the capability of assigned or attached forces, other mobility forces can support intratheater airlift using a support relationship. The supported commander may also request augmentation from SecDef through the request for forces process.

For more information on request for forces/capabilities, see Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3122.01, Joint Operation Planning and Execution System (JOPES) Volume I: (Planning Policies and Procedures).

c. **JTF Air Mobility Operations.** During joint operations, it may be necessary to establish a JTF within a GCC's AOR. This allows the GCC to maintain a theater-wide focus and, at the same time, respond to a regional requirement within the theater. When this occurs, a JTF will be designated and forces made available for this operation. The



A typical joint air operations center

COMAFFOR may be delegated OPCON of USAF assets and, if designated the JFACC, will typically exercise TACON of air mobility forces made available to the JFACC. If the JTF requires additional air mobility forces beyond those already made available for tasking, additional augmentation may be requested.

(1) The COMAFFOR may appoint a DIRMOBFOR to function as coordinating authority for air mobility with all commands and agencies, both internal and external to the JTF, including the JAOC, the 618 AOC (TACC), and the JDDOC and/or the JMC.

(2) The DIRMOBFOR:

(a) Functions as coordinating authority for air mobility with all commands and agencies, both internal and external to the JTF. The DIRMOBFOR exercises coordinating authority among the JAOC, AMCs 618 AOC (TACC), and the JMC/JDDOC for air mobility issues. An essential role for the DIRMOBFOR is serving as the principal interface between the JAOC, the theater's logistics directorate of a joint staff (J-4), and the JMC/JDDOC to ensure appropriate prioritization of air mobility tasks as directed by the JFACC. The theater's AOC/AMD chief fulfills the DIRMOBFOR duties during daily operations.

(b) Collaborates with the theater JAOC/AMD chief on integration of intertheater forces with intratheater forces during air mobility operations, on behalf of the COMAFFOR/JFACC.

(c) Also has distinct responsibilities in relation to JFC staffs. Air mobility requirements do not originate in the JAOC. They originate at the component level and are validated by either the theater JMC/DDOC (when established) or by the CCDR's operations directorate of a joint staff in coordination with the J-4. This may vary slightly in different theaters. Consequently, an essential role for the DIRMOBFOR is to serve as the principal interface between the JAOC, the theater's J-4, and the JMC/JDDOC to obtain appropriate prioritization of intertheater air mobility tasks while balancing requirements and air mobility capability. The DIRMOBFOR coordinates/deconflicts intertheater movements with the intratheater movements controlled by the theater JAOC/AMD, and ensures intertheater movement are annotated to the air tasking order (ATO). Clear and timely communication between the DIRMOBFOR and the JAOC director is essential, as the JAOC director is responsible to the JFACC for operations (intertheater and intratheater).

(3) Specific duties of the DIRMOBFOR include the following:

(a) Coordinate integration of intertheater air mobility capability provided by USTRANSCOM.

(b) Coordinate with the JAOC director/commander and AMD chief to integrate intertheater air mobility operations supporting the JFC into the air assessment, planning, and execution process and deconflicts intertheater movements with intratheater air operations. The AMD chief is directly responsible to the JAOC director for the planning and execution of allocated mobility forces IAW JFACC guidance.

(c) Coordinate with the 18 AF AFTRANS and 618 AOC (TACC) to ensure the joint force air mobility support requirements are met.

(d) Assist in the integration and coordination of the multinational air mobility plan.

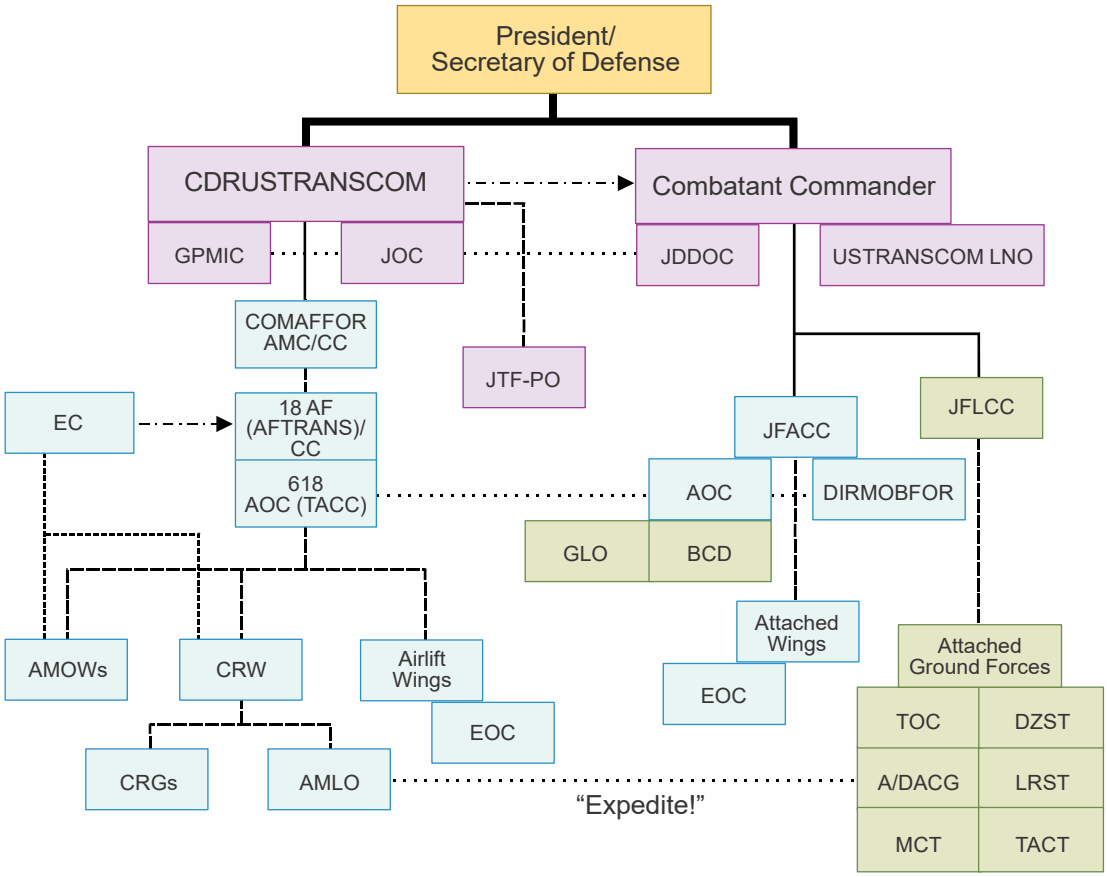
4. Command and Control Structures

The air mobility C2 system relies on consistent processes and the ability to rapidly expand to meet the specific needs of the task at hand. This facilitates rapid transition from peacetime to contingency or wartime operations.

a. **Routine Operations.** To assist in the employment of mobility forces, each of the GCCs has a USTRANSCOM transportation liaison officer (LNO). GCCs with assigned air mobility forces have COCOM over those forces and normally delegate OPCON over those forces through Service CCs. The COMAFFOR executes the C2 of USAF air operations in the theater or AOR through the AOC. One of the AOC divisions, the AMD, usually oversees intratheater air mobility operations. Figure II-1 illustrates these routine, day-to-day command relationships for controlling air mobility forces.

b. **Establishing a JTF.** JTFs can be established by SecDef, a CCDR, subordinate unified commander, or an existing JTF commander. The establishing authority designates the commander, assigns the mission, designates forces, and delegates command authorities

Mobility Air Forces Command and Control



Legend

A/DACG	arrival/departure airfield control group	JFACC	joint force air component commander
AFTRANS	Air Forces Transportation	JFLCC	joint force land component commander
AMC	Air Mobility Command	JOC	joint operations center
AMLO	air mobility liaison officer	JTF-PO	joint task force-port opening
AMOW	air mobility operations wing	LNO	liaison officer
AOC	air operations center	LRST	long-range surveillance team
BCD	battlefield coordination detachment	MCT	movement control team
CC	component commander	618 AOC (TACC)	618 Air Operations Center (Tanker Airlift Control Center)
CDRUSTRANSCOM	Commander, United States Transportation Command	TACT	tactical aviation control team
COMAFFOR	commander, Air Force forces	TOC	tactical operations center
CRG	contingency response group	USTRANSCOM	United States Transportation Command
CRW	contingency response wing		
DIRMOBFOR	director of mobility forces		
DZST	drop zone support team		
18 AF	Eighteenth Air Force		
EC	expeditionary center		command
EOC	emergency operations center		combatant command (command authority)
GLO	ground liaison officer		operational control
GPMIC	Global Patient Movement Integration Center		administrative control
JDDOC	joint deployment and distribution operations center		coordinating authority
			support

Figure II-1. Mobility Air Forces Command and Control

and will determine appropriate military objectives and set priorities for the JTF. The JTF commander establishes appropriate subordinate command relationships, including those

with functional and Service components. The JTF commander will normally assign JFACC responsibilities to the CC having the preponderance of air assets and the capability to effectively plan, task, and control joint air operations. If a GCC requires additional air mobility capabilities, the request must be processed through the Joint Staff for SecDef approval.

c. **Establishment of a JAOC and Associated AMC Relationships.** The JFACC requires a C2 organization appropriately sized and tailored to support JTF or subordinate command-related air operations. The JAOC is the air planning and execution focal point for the JTF (or other subordinate command). Centralized planning, direction, and coordination of air mobility operations occur in the AMD.

(1) When a JTF is formed, command relationships for air mobility forces will be established by the JTF establishing authority, normally exercised through the JFACC/COMAFFOR. The JAOC director is charged with the effectiveness of joint air operations and focuses on planning, coordinating, allocating, tasking, executing, and assessing air operations in the OA based on JFACC guidance. The DIRMOBFOR and JAOC/AMD chief will coordinate with the JAOC director to ensure the intertheater and intratheater air mobility scheme of maneuver meets the JFACC's guidance.

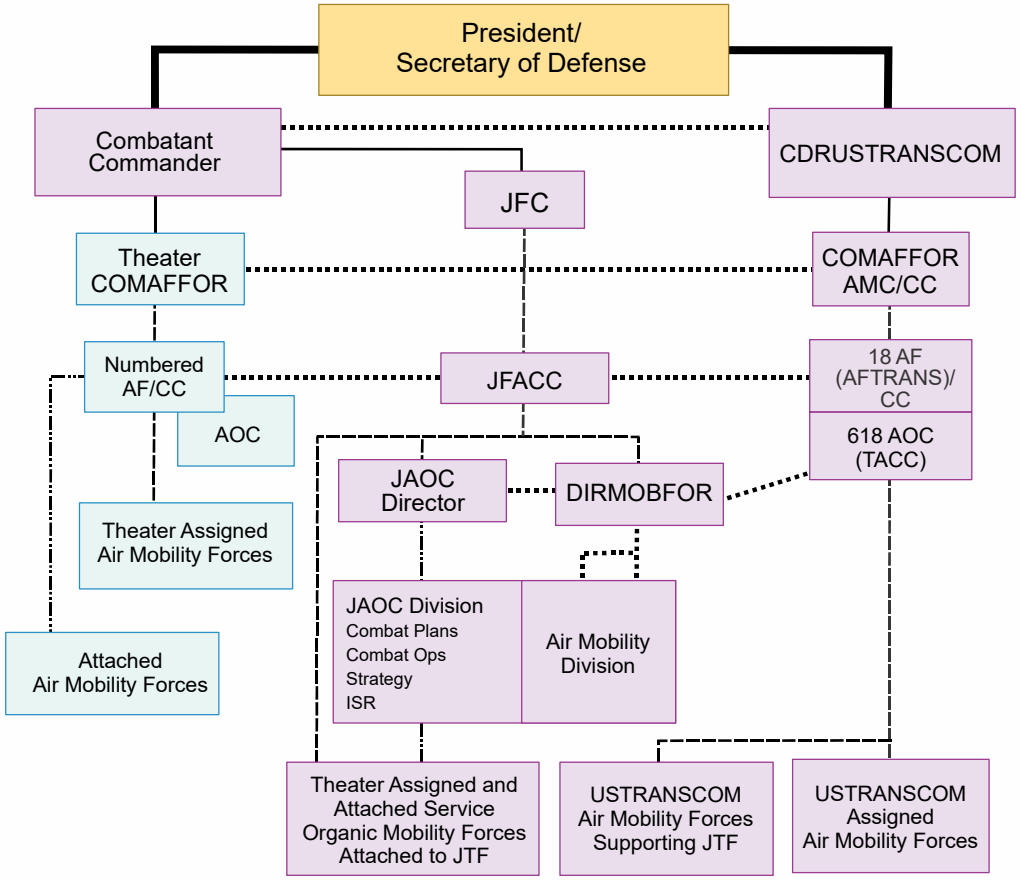
(2) The AMD is made up of an air mobility control team, an airlift control team, an AR control team, an AE control team, and an aerial port control team. Additionally, an AMD may also include a theater direct delivery cell, an air mobility support team, and other specialty teams. The AMD integrates and directs the execution of theater assigned or attached Service organic mobility forces operating in the AOR or JOA in support of JFC objectives. OPCON of USTRANSCOM-assigned air mobility forces supporting, but not attached to, the JTF or subordinate command will remain with AMC. This expansion of C2 systems requires the AMD to interface with the 618 AOC (TACC), other AMDs if required, and the JAOC combat operations and combat plans divisions to ensure air mobility missions are included in the ATO. Figure II-2 illustrates the arrangement of the JAOC and associated command relationships with respect to air mobility operations.

d. **Additional C2 Structures.** These consist of fixed and mobile units and facilities that provide the JAOC with the information and communications required to monitor the ongoing air operation and control USAF aircraft in theater air operations. The broad organization and functions of these units and facilities are discussed here in their relationship to intratheater air mobility.

(1) **JDDOC.** The integration of intertheater and intratheater movement control is the responsibility of the supported CCMD and USTRANSCOM. The JDDOC is a GCC's movement control organization designed to synchronize and optimize national and theater multimodal resources for deployment, distribution, and sustainment. The JDDOC is normally placed under the control and direction of the CCMD J-4 but may also be placed under other command or staff organizations.

(2) **Joint Task Force–Port Opening (JTF-PO).** USTRANSCOM also provides a JTF-PO to rapidly open and operate ports of debarkation and initial distribution networks

The Joint Air Operations Center and Command Relationships for Air Mobility Forces



Legend

AF	Air Force	JFACC	joint force air component commander
AFTRANS	Air Forces Transportation	JFC	joint force commander
AMC	Air Mobility Command	JTF	joint task force
AOC	air operations center	618 AOC (TACC)	618 Air Operations Center (Tanker Airlift Control Center)
CC	component commander	USTRANSCOM	United States Transportation Command
CDRUSTRANSCOM	Commander, United States Transportation Command		
COMAFFOR	commander, Air Force forces		
DIRMOBFOR	director of mobility forces		command
18 AF	Eighteenth Air Force		combatant command (command authority)
ISR	intelligence, surveillance, and reconnaissance		operational control
JAOC	joint air operations center		as designated
			coordinating authority

Figure II-2. The Joint Air Operations Center and Command Relationships for Air Mobility Forces

for joint distribution operations supporting humanitarian, disaster relief, and contingency operations. The JTF-PO (APOD) consists of an air element for airfield operations and a surface element for cargo transfer and movement control. The surface element operates a forward distribution node for clearance of cargo from the APOD. The JTF-PO (APOD) is

designed to arrive early at an airfield to establish single port management and provide ITV from the beginning of an operation. The JTF-PO deploys under the authority of the CDRUSTRANSCOM, in direct support of the CCDR; it is designed to operate for 45-60 days and be relieved by follow-on forces.

(3) **Contingency Response Forces (CRFs).** CRFs conduct expeditionary port opening operations for USTRANSCOM and GCCs to enable rapid global mobility. CRFs conduct an array of missions, including assessing airbase capabilities, opening expeditionary airbases, and conducting airfield operations. Active duty CRFs maintain readiness to deploy within 12 hours of notification. CRFs are designed for a decreased transportation and logistics footprint to enable rapid deployment and are not designed as long-term sustainment assets. They usually deploy with organic supplies and must be resupplied after five days. CRFs normally coordinate actions with theater command elements to ensure theater-specific responsibilities such as force protection meet their mission requirements. CRFs are normally planned to operate for 45-60 days before handling off responsibilities to follow-on sustainment forces so they can redeploy and reconstitute for subsequent contingency operations. Planners should consider follow-on requirements early on to facilitate timely CRF replacement and coordinate with the deployed CRF to ensure a smooth mission transition. When CRFs deploy to a GCC's AOR, command and support relationships should be specified and coordinated before operations begin. 18 AF normally retains OPCON of USTRANSCOM-assigned CRFs, but TACON may be transferred to the theater COMAFFOR or JFACC with SecDef approval for unique missions. CRFs are organized into tailored force elements known as contingency response groups (CRGs), CREs, and contingency response teams (CRTs) that are comprised of broad cross-section of USAF skill sets to accomplish a range of airbase opening and mobility support operations.

(4) **Patient Movement Requirements Centers (PMRCs)**

(a) **Joint Patient Movement Requirements Center (JPMRC).** A JPMRC is a joint activity established to coordinate the joint patient movement requirements (PMRs) function for a JTF operating within a GCC's AOR. JPMRCs coordinate intratheater patient movement (PM) and coordinate with the appropriate United States Transportation Command patient movement requirements center (TPMRC) (East, West, Americas) to provide management for intertheater regulating and PM. Synchronization of plans and additional guidance related to the world wide PM system is coordinated through the USTRANSCOMs Office of the Command Surgeon.

(b) **TPMRCs**. TPMRC-Americas supports PMRs in the Americas (USNORTHCOM and USSOUTHCOM AORs); TPMRC-East supports PMRs in the USCENTCOM, USAFRICOM, and USEUCOM AORs; and TPMRC-West supports PMRs in the USINDOPACOM AOR. TPMRCs are responsible for theater-wide PM and coordinate with MTFs to identify the proper treatment/transportation assets required. The TPMRC communicates this transport to bed plans to the theater Service transportation component or other agencies responsible for executing the mission. TPMRCs coordinate with the USTRANSCOM Office of the Command Surgeon, which provides global

oversight; implements policy; and standardizes regulations, clinical standards, and safe movement of uniformed Services and other authorized or designated patients.

(c) **USTRANSCOM Office of the Command Surgeon.** USTRANSCOM Office of the Command Surgeon is a joint activity, reporting directly to CDRUSTRANSCOM, that serves as the DOD single manager for the development of policy and standardization of procedures and information support systems for global PM. The Command Surgeon's office implements policy and standardizes procedures for the regulation, clinical standards, and safe movement of patients. The Command Surgeon's office orchestrates and maintains "global oversight" of the PMRCs in coordination with the GCCs and external international organizations as required. The Command Surgeon's office synchronizes current and future operational PM plans to identify available assets and validate transport to bed plans through the supporting USTRANSCOM PMRCs.

See JP 4-02, Joint Health Services, *for more information on PMRCs.*

(5) **Emergency operations center (EOC).** As the C2 facility of wings, EOCs link wing commanders to the JAOC and enable them to command their forces. To facilitate joint operations, Army ground liaison officers (GLOs) or other component representatives may be assigned to an EOC.

(6) **Control and Reporting Center (CRC).** The CRC is directly subordinate to the JAOC and is 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 air mobility aircraft operating in the OA.

(7) **Tactical Air Control Party (TACP).** TACPs consist of personnel equipped and trained to assist US ground commanders to plan and request tactical air support.

(8) **Special Tactics Team (STT).** An STT is comprised of USAF combat control team, pararescue, special operations weather, and selected TACP team personnel capable of providing terminal control, reconnaissance, and recovery. Special tactics core competencies include austere airfield control; environmental reconnaissance/objective area weather forecasting; terminal attack control/fire support operations; personnel rescue and recovery; battlefield trauma care; and landing/assault zone assessment, establishment, and control. In addition, the STT include aircrew flight equipment, logistics, weapons, supply, medical logistics, vehicle maintenance, and radio maintenance. These are highly skilled individuals who are technical experts and are worldwide deployable to support any type of contingency. They are uniquely organized, trained, and equipped to facilitate the air-ground interface during joint special operations and sensitive recovery missions. These teams can prepare the operational environment for air mobility operations by conducting survey assessments, weather observations, and reconnaissance and surveillance of objective airfields, DZs, and assault zones. STTs establish terminal area airspace control (attack, C2, and air traffic services) at remote assault (e.g., drop or landing) zones and austere or expeditionary airfields. As special operations forces (SOF), they cannot sustain these operations for long periods of time. When deployed, STTs become part of the theater SOF and normally fall under the OPCON of the joint force special operations component

commander (JFSOCC) or the joint special operations task force. When supporting theater mobility operations, command authority over STTs should remain in the SOF chain of command. Command relationships and authority should be clearly stated and understood by special operations and air CCs. STTs are requested from the JFSOCC for tasking.

(9) The global reach laydown team is an Air Force medical support team that provides the personnel and equipment required to administer medical care for injuries and illness, and to administer preventive medical care reducing the risk of a catastrophic or detrimental event that could impact on mission effectiveness. The team also makes recommendations to CRF commanders and team chiefs for countermeasures against environmental and physiological stressors to enhance mission effectiveness. While they support deployed CRF operations, the medical support team will be under the same command relationship as the CRF (i.e., if the CRF is OPCON to the JTF, the medical support team should be also).

(10) **AMLOs.** AMLOs are highly qualified, rated mobility Air Force officers selected, trained, and equipped to integrate with and provide air mobility planning and expertise to supported Army, USMC, and special operations Service and joint force component staffs. They facilitate joint operations integration between air and ground CCs and their agencies during all phases of joint air movement and maneuver, and sustainment operations. AMLOs are capable of providing tactical combat support and training, to include DZ control and survey, LZ safety officer duties, and basic airfield assessments. The Commander, 18 AF, normally retains OPCON of the AMLOs assigned to AMC and gains OPCON of AMLOs assigned to other major commands through the Secretary of Defense Orders Book process when appropriate. Delegation of TACON of AMLOs will be articulated in specific 18 AF execution and/or fragmentary orders. AMLOs are granted direct liaison authority (and coordinating authority when specified) to provide essential coordination with and between agencies supporting joint air movement and maneuver and sustainment operations including, but not limited to, the JDDOC; 618 AOC (TACC); theater DIRMOBFOR; theater AMD; and operations and sustainment components of Army, USMC, and special operations units supporting aircrews, CRFs, other AMLOs.

(11) **Airborne Elements.** As airborne C2 nodes, the E-2 Hawkeye and the E-3 Airborne Warning and Control System (AWACS) may perform limited C2 functions in support of theater air mobility operations.

(12) **Army Tactical Operations Centers (TOCs).** TOCs are found in Army units down to maneuver battalions. AMLOs provide input to TOCs at the appropriate echelon depending on the type or phase of an operation but will normally locate at the division level and above where air movement and sustainment planning, validation, or prioritization decisions are made. Intratheater airlift requests will be validated and prioritized by the Army Service CC.

(13) **Battlefield Coordination Detachment (BCD).** The airlift section of the BCDs will be located within the JAOC and will consist of support personnel organized into airlift, air defense, fire support, and airspace control elements. Overall, the BCD monitors and interprets the land battle situation and provides the necessary interface for the exchange

of current intelligence and operational data. The airlift section is collocated with the AMD and is responsible for monitoring movements on joint airlift operations supporting Army forces (ARFOR) and providing feedback to ARFOR operations and logistics staff officers. The airlift section is the single point of contact within the JAOC for coordinating and monitoring Army airlift requests, changes, and cancellations. The other sections coordinate fire and close air support for intratheater airlift missions, as appropriate.

(14) **Arrival/Departure Airfield Control Group (A/DACG).** The A/DACG is a provisional organization designed to assist AMC and the deploying unit in receiving, processing, and loading or unloading personnel and equipment. A/DACGs are designed to coordinate and control the movement of personnel and materiel through air terminals. The capabilities of the A/DACGs are tailored based on the mission and military units performing aerial port operations. Comprised mainly of personnel and resources from theater sustainment units along with elements of the moving unit, the A/DACG is task-organized to reflect the type of move and degree of support available at the air terminal. Service transportation support at air terminals assist with the deployment, redeployment, and sustainment of forces. Normally, an Army, USN, or USMC A/DACG assists the mobility forces in processing, loading, and off-loading deploying and arriving Service component personnel and equipment. A/DACGs are deploying Service component's counterpart to an USAF CRG/CRE. 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.

(15) **Army Movement Control Teams (MCTs).** MCTs are responsible for coordinating the movement of personnel and materiel from air terminals to their designated destinations. MCTs operate independently of the A/DACG and are responsible for controlling movement on an area basis.

(16) **Army Long-Range Surveillance Teams (LRSTs).** LRSTs can support airlift by conducting reconnaissance and surveillance operations of named areas of interest around terminal areas. LRSTs, which are organized from long-range surveillance detachments and companies, are organic to each Army division. Typically, one to six LRSTs support an airborne or air assault operation. If required, LRSTs can also mark DZs and LZs and direct fire support for airlift operations.

(17) **Army Drop Zone Support Teams (DZSTs).** Assigned, attached, or supporting DZSTs provide the supported ground CC with organic capability to support airdrop operations. When the supported ground force commander has insufficient organic capability or capacity to support airdrop operations, USAF STTs and/or AMLOs may be requested to provide needed capabilities or additional capacity. 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 CDS bundles. Their responsibilities are to:

(a) Evaluate DZs.

(b) Evaluate ground hazards.

(c) Ensure the suitability of the DZ and the ability to recover airdropped personnel and materiel.

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

(19) **GLOs.** Army units may assign GLOs to the JAOC/AOC and theater airlift EOCs. In those positions, they monitor and report on the current airlift situation to their parent units. They also advise USAF mission commanders and staffs on Army component air movement requirements, priorities, and other matters affecting the airlift situation. GLOs assigned to the JAOC/AOC report through the BCD. They are also the principal points of contact between the USAF CRGs and A/DACGs for controlling Army theater airlift movements.

5. Command and Control of Airfields During Contingency Operations

a. During contingency operations, efficient and effective use of limited airfield capacity and resources is often critical to a successful military response. The task is complicated when airfields in the theater of operations are host to a variety of allied military, nongovernmental organizations (NGOs), and commercial air activities. USTRANSCOM, through AMC, performs single port manager (SPM) functions necessary to support the strategic flow of the deploying forces' equipment and sustainment from the APOE and hand-off to the supported CCDR in the APOD. The SPM provides strategic deployment status information to the supported CCDR and to manage workload of the APOE and APOD based on the CCDR's priorities and guidance.

b. To facilitate C2 at joint-use airfields, the JFC designates a senior airfield authority (SAA) responsible for safe airfield operations. The SAA is trained and certified in SAA duties and responsibilities, including ATC and airfield/airspace management, and ensures unity of effort among the various commands and other activities operating on the airfield and serves as the arbitrator between competing interests on the airfield. Depending on the types of air operations being conducted at a specific airfield, the SAA will normally be selected from one of the following commands: Army aviation battalion/brigade; USAF expeditionary wings, groups, or squadrons; USMC aircraft wing/group/squadron; USTRANSCOM's CRF; or Air Force Special Operations Command special tactics squadrons. The SAA is responsible for overall effectiveness of the airfield and coordination of all requirements for use of the airfield and its facilities. The SAA controls airfield access and coordinates for airfield security with the base commander or base cluster commander or the joint security coordinator for the area if a base commander has not been designated.

(1) In situations where US forces are not the overarching authority for airfield operations (e.g., the HN maintains airfield control, operational civil airfield), the SAA

maintains oversight for all US/multinational airfield operations and is the primary negotiator with the respective airfield officials for any support required.

(2) If dual-hatted as the base commander, the SAA has control and responsibility for security operations and will exercise TACON over all forces performing base defense within the base boundary through the C2 mechanism of the base defense operations center (BDOC) (see JP 3-10, *Joint Security Operations in Theater*). The base commander, through the BDOC, addresses threats with attached forces within the designated base boundary, coordinates with the designated area commander(s) for additional support or forces, and, if required, requests joint fires within the base boundary. Within this context, clear lines of authority are required to ensure resources and personnel are protected from ground-based attacks and standoff attacks commensurate with the commander's integrated base defense plan.

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CHAPTER III
PLANNING AIR MOBILITY OPERATIONS

"In preparing for battle I have always found that plans are useless, but planning is indispensable."

General, Dwight D. Eisenhower, US Army, (1890-1969)

1. Air Mobility Planning Considerations

Mobility aircraft can accomplish a variety of missions. The joint planning process determines the mobility requirements, which drives mobility planning. Joint planning occurs within APEX used by the JPEC to plan and execute mobilization, deployment, employment, sustainment, redeployment, and demobilization activities associated with joint operations. Successful movements start with well-defined requirements from the users and may involve significant upfront coordination with lift providers. In short, airlift planning is based on the requirements, and the lift planning process is a joint effort between the user and provider that requires lead time and diligence. Therefore, mission planning must include an intelligent application of sound tactical concepts learned from previous conflicts, operational evaluations, training exercises, tactics development programs, and threat analysis. Prior to specific tasking and detailed mission planning, a preliminary study must be done to develop mission profiles and determine the potential for mission success. Feasibility studies are usually done at the joint command level but may be delegated as low as wing level planners. Planners are responsible for providing commanders with accurate assessments during all phases of planning. Most contingency operations will involve joint forces and should integrate the user in mission planning. In addition, planners should include intelligence, C2, escort, security/defense, engineering, combat air patrol (CAP), suppression of enemy air defenses (SEAD), Service LNOs, weather, maintenance, AE planner and AE PM item medical logistics specialist, cargo handlers and inspectors, and airspace controllers. The degree of integration will influence the outcome of the mission. Sharing critical information, especially operational intelligence, between all players clarifies objectives, develops alternatives, and assesses risk. When aircrew, operator, and planner are geographically separated, secure communication is imperative.

a. **Joint Airspace Control.** Air mobility planners should be involved in the creation of the airspace control plan. Air mobility aircraft typically require preferred altitudes and routing to avoid or mitigate threats. Congested airspace and potential friendly fire are also major concerns. In addition, air mobility planning considers international, HN, and military airspace control plans and procedures.

For further information on airspace control at the operational level of warfare, see JP 3-52, Joint Airspace Control. *For further information on terminal airfield ATC, see Army Techniques Publication 3-52.3 (Field Manual [FM] 3-52.3)/Marine Corps Reference Publication (MCRP) 3-25A/Navy Tactics, Techniques, and Procedures (NTTP) 3-56.3/AFTTP 3-2.23,* Multi-Service Tactics, Techniques, and Procedures for Joint Air Traffic Control.

b. **Air Corridors or Operating Areas.** Airlift and AR operations often require secure air corridors or operating areas (e.g., DZ and landing/assault zone run-in and AR tracks). These may be shared with other air missions. Regardless, the use of a corridor requires close coordination between the appropriate airspace control authority, the area air defense commander, JAOC, and all other joint force component ground and aviation elements. Changing of the corridor system may be required depending on the threat lay down and enemy actions.

2. Marshalling

Marshalling includes the preparations required to plan, document, and load equipment and personnel aboard the aircraft. The marshalling plan provides the administrative and logistic procedures to accomplish these tasks. 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. The USAF component's portion of the marshalling operation is developed during air movement planning and consists of instructions regulating aircraft movement and the parking plan. These procedures are stipulated in appendix 5 (Mobility and Transportation) to annex D (Logistics) of the OPORD.

a. **Preparations**

(1) **Planning.** The joint force staff coordinates with administrative and logistic agencies for maximum support during marshalling. This support includes transportation, communications, and personnel support functions (campsite construction, operation, and maintenance; messing; and religious, fitness, 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 USAF security at the departure airfield. The Air Transportability Test Loading Activity is the DOD agency responsible for the approval of airlift cargo (see Department of Defense Instruction [DODI] 4540.07, *Operation of the DOD Engineering for Transportability and Deployability Program*) on fixed-wing USAF cargo aircraft. Items that exceed certain parameters will create air transportability problems and delays unless a certificate already exists on the Air Transportability Test Loading Activity Website.

For details on air base defense, see JP 3-10, Joint Security Operations in Theater.

(2) **Logistics.** The unit logistics officer normally 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.

(3) **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 C2 more difficult and may diminish the effectiveness of supporting activities. The factors affecting selection of marshalling areas and departure airfields are illustrated in Figure III-1.

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

(a) Establish liaison with the departure airfield control group (DACG).

(b) Obtain equipment and supplies as early as possible.

(c) Issue prepackaged supplies and equipment to the airborne forces to expedite loading operations.

(d) Perform final preparation of vehicles and equipment.

(e) Ensure adequate shoring and dunnage materials are readily available.

(f) Receive parachutes and other airdrop items and prepare airdrop loads in coordination with the responsible airdrop support unit.

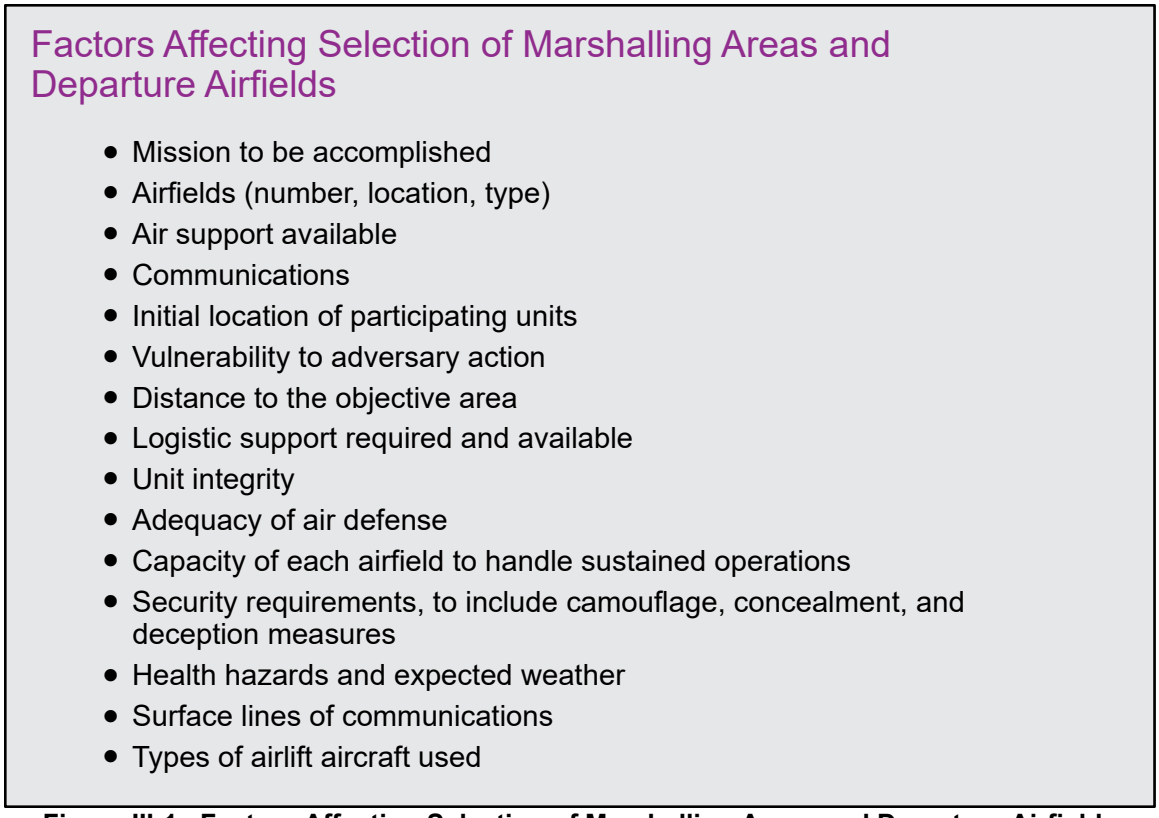


Figure III-1. Factors Affecting Selection of Marshalling Areas and Departure Airfields

(g) Prepare and certify aircraft load plans (appropriate USAF officials verify and approve load plans), personnel, and equipment manifests (and annotate any hazardous materials by class) and submit them through the DACG (or designated CCDR agent if no DACG is present) to the supporting airlift elements. As a minimum, manifest information should be submitted electronically, either via disk or direct system interface, to facilitate movement processing and ITV reporting. En route messing is a deploying unit responsibility.

b. **Responsibilities.** Arrival and departure airfield operations are conducted by USAF units and the deploying component units.

(1) CRFs marshall 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.

(2) The A/DACG is the deploying Service component's counterpart to the CRG, CRE, or CRT. This organization is sized to support the unit being deployed.

c. **Execution**

(1) The deploying unit assembles, prepares, and documents its cargo and personnel for air movement. Discrepancies are identified and corrected prior to air movement. Departure airfield operations consist of four separate areas of activity. Each activity takes place in a designated area and involves specific tasks. Figure III-2 shows the four separate areas of activity and outlines the major functions of each area.

(2) **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 MAJCOM provides transportation to move personnel and chalk loads (by chalk number) to aircraft. Personnel in charge of aircraft chalk loads should receive mission briefings concerning the route to their respective aircraft. Personnel and equipment should arrive at on-load airfields IAW prescribed times published in the air movement plan. The GAMSS units control 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.

(3) **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:

(a) Additional lead-time may be required;

(b) Skilled rigging supervision is needed;

(c) Materials handling equipment (MHE) required; and

(d) Adequate facilities, to include a relatively clean and illuminated rigging area, should be provided if tactically feasible.

Departure Airfield Operations

Marshalling Area

Deploying unit responsibility.

Prepare vehicles, equipment, cargo, and personnel into chalk loads for delivery to the DACG alert holding area for air movement.

Alert Holding Area

DACG area of responsibility.

The DACG ensures the movement of vehicles, equipment, and cargo from the alert holding area to the call forward area in orderly fashion.

The reception of aircraft loads and conducting preinspections are accomplished here.

Call Forward Area

Dual DACG and CRF area of responsibility.

Joint inspection and discrepancy corrections are conducted in this area.

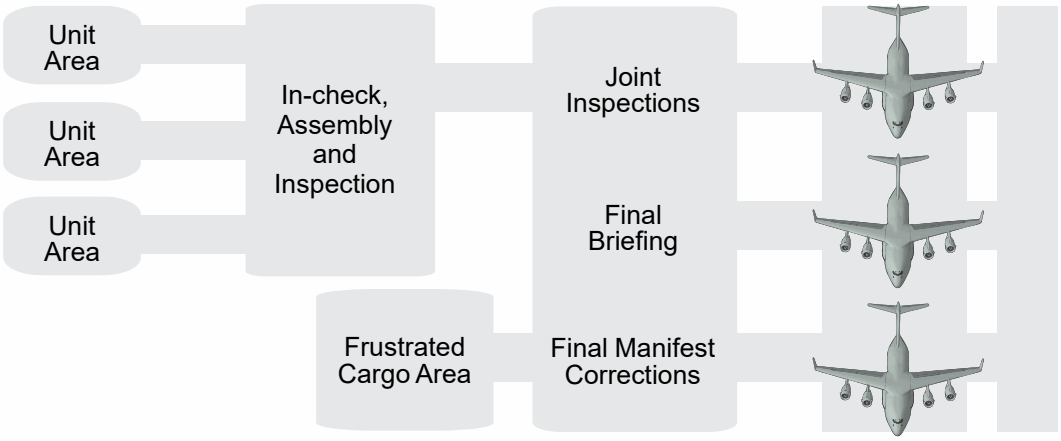
Chalk loads are moved from the call forward area and released into the CRF at the ready line.

Ready Line/ Loading Ramp Area

CRF area of responsibility.

Receives control of chalks from the DACG and conducts additional briefings and inspections as required.

Responsibility for all air movement operations.



Major Functions

- In-checks cargo
- Prepares personnel and cargo manifests
- Prepares other documentation agreed upon during the joint planning conference
- Conducts initial inspection of each chalk
- Releases each chalk to the DACG at the alert holding area

Major Functions

- Accepts chalk from deploying unit
- Conducts inspection
- Establishes traffic flow pattern
- Establishes communications with deploying units and other functional areas
- Provides backup communications with CRF

Major Functions

- Conducts joint inspection
- Conducts final briefing and performs final manifest corrections
- Compiles statistical data
- Provides area for correction of discrepancies identified during the joint inspection

Major Functions

- Establishes aircraft parking plan
- Receives load at ready line, directs to aircraft and, in conjunction with aircraft load master or load team chief, supervises the supported component while loading and restraining cargo aboard aircraft

Legend

CRF contingency response force

DACG departure airfield control group

Figure III-2. Departure Airfield Operations

(4) **Cross-Loading.** Whether administrative or combat-loaded, aircraft may also be cross-loaded. **Cross-loading distributes supplies and/or personnel among aircraft to ensure the entire supply of one item or unit is not lost by an abort or loss of one or**



Airmen from the 730th Air Mobility Squadron push cargo into a C-17 Globemaster III.

a few 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.

(5) **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, the holding area, and unit area—and begins the "reception" segment of the joint reception, staging, onward movement, and integration (JRSOI) phase of deployment operations. JRSOI is the essential process that transitions deploying forces, consisting of personnel, equipment, and materiel arriving in theater, into forces capable of meeting the CCDR's operational requirements. Reception operations include all those functions required to receive and clear personnel, equipment, and materiel through the port of debarkation. This process may be modified or streamlined for combat offload operations. Figure III-3 shows a typical layout of arrival airfield operations.

(6) **Debarkation Airfield Operations.** There are major considerations for debarkation that can dramatically affect the overall amount of equipment or personnel received in a given amount of time. These include maximum (aircraft) on ground (MOG), airfield operating hours, customs operating hours and restrictions, special handling (hazardous cargo handling/parking), HN restrictions, fueling operations, fleet requirements, MHE, on-site maintenance support, and aircraft ground equipment.

For more information on the JRSOI phase of the deployment process, see JP 3-35, Deployment and Redeployment Operations.

Arrival Airfield Operations

Off-Load Ramp Area

CRF area of responsibility.

Responsible for air traffic control, aircraft parking, supervision of offloading operation, and releasing planeload to AACG.

Holding Area

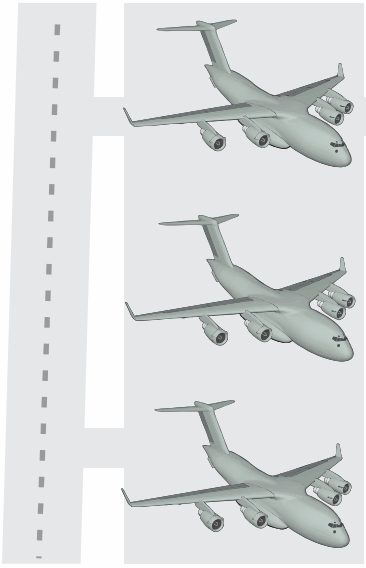
AACG area of responsibility.

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.



Assembly and Inspection

Provide Minor Services (Gas, Oil, Minor Maintenance)

Intransit Holding Area

Unit Area

Unit Area

Unit Area

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
- Provides MHE, MHE operators, and MHE mechanics beyond the capability of the user and provides and operates any MHE that is unique to Commander, USTRANSCOM

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 (CRF)
- Establishes temporary storage area

Major Functions

- Accepts aircraft loads
- Reception segment of joint reception, staging, onward movement, and integration

Legend

AACG	arrival airfield control group	MHE	materials handling equipment
CRF	contingency response force	USTRANSCOM	United States Transportation Command

Figure III-3. Arrival Airfield Operations

(7) Unit commanders or team chiefs coordinate with the A/DACG for use of available facilities and areas at departure airfields for a command post, communications centers, briefing areas, and equipment and supply handling points.

3. Intelligence

Intelligence is fundamental to effective planning, security, and deception. The intelligence planning effort must be focused to ensure it is responsive to the commander's requirements and the requirements of the subordinate units. To ensure the intelligence effort addresses the commander's needs and is fully synchronized with operations, it is imperative the appropriate intelligence staff elements be fully involved in the operations planning process from the outset. Pertinent information must be analyzed concerning the operational environment pertaining to potential threats. Information shortfalls and the commander's critical information requirements must be identified early, converted into intelligence requirements, and submitted for collection or production as requests for information. A joint intelligence preparation of the operational environment (JIPOE) effort should be initiated early to identify and assess possible adversary course of action (COA) that could threaten friendly air mobility operations. Effective intelligence planning provides commanders at all levels with the intelligence they need to apply their available forces wisely, efficiently, and effectively. The 618 AOC (TACC) intelligence along with AMC A2 [Directorate of Intelligence] support operational level planning of all USTRANSCOM air mobility missions and coordinates with USTRANSCOM's Intelligence Directorate to fulfill collection and production requirements. In the JAOC, intelligence professionals are integrated into the AMD to support mobility planning and execution with support from the JAOC intelligence, surveillance, and reconnaissance division to ensure AMD intelligence analysis and information is current and consistent.

For more information regarding the criticality of intelligence support, see JP 2-0, Joint Intelligence.

4. Vulnerabilities and Threats

a. **Vulnerabilities.** Air mobility forces are vulnerable during all phases of theater and international flight operations, at home station, APOEs, en route locations, APODs, and forward airfields. Mission planning must include a thorough analysis of vulnerabilities requirements throughout all phases of flight and ground operations. Military and CRAF flights into civilian airfields and off-base billeting of aircrews create unique vulnerabilities that must be addressed with local policy authorities. Force protection specialists will work to ensure that all air mobility vulnerabilities are considered.

For additional information on force protection in a theater of operations, see JP 3-10, Joint Security Operations in Theater.

b. **Threats.** Air mobility planning must begin with threat analysis and threat avoidance. Normally, mobility assets operate in a permissive to low-threat environment. However, antiaccess and area denial capabilities of threats should be considered when planning and conducting air mobility operations. These capabilities consist not only of advanced counter-maritime and counterair systems designed to destroy critical mobile assets, such as surface ships and aircraft, but also long-range land attack capabilities that threaten APODs and extend into space and cyberspace. Threat mitigation in the OA begins with planning and before entry of air mobility assets into the region and may require

significant integration with joint/multinational air and ground combat forces for force protection during execution. Planners must address the unique aspects of airborne, ground, space, cyberspace, electromagnetic, medical, and CBRN threats to air mobility operations.

(1) **Airborne Threats.** Air mobility aircraft are vulnerable to surface-to-surface, surface-to-air, and air-to-air threats. Large fixed-wing air mobility assets have significant radar signatures and lack maneuverability, fly slower speeds, and in many instances are equipped with limited or no onboard defensive systems. The smaller fixed-wing airlift aircraft and helicopters have lower radar cross sections; however, they suffer equally with limited onboard defensive systems.

(2) **Ground Threats.** Air mobility aircraft, aircrews, and support personnel are particularly vulnerable during ground activities. On/offload operations offer large, stationary targets for adversary direct fire and standoff weapons. Commanders and their staffs should consider the employment of expedited ground operations (e.g., engine-running offload and combat offload/onload) to reduce vulnerability to ground threats. Perimeter and other security measures should be planned and coordinated with those responsible for the area outside the base/airfield compound (e.g., joint security area coordinator).

(3) **Cyberspace Threats.** The GME is dependent on cyberspace (computers, phones, radios) to plan, execute, and debrief current and future operations. MAF aircraft and C2 capabilities are reliant upon cyberspace to function. Those dependencies must be secured and defended against adversary action to deny or manipulate critical elements of the GME.

(4) **Electronic Warfare (EW) Threats.** Air mobility operations are increasingly threatened by emerging EW capabilities. Aircrews must plan to use alternative procedures to overcome communications and Global Positioning System (GPS) jamming capabilities. Adversaries may attempt to employ EW to disrupt airfield operations at APODs.

(5) **CBRN Threat.** CBRN threats include the capability to employ and the intentional employment of, or intent to employ, weapons or improvised devices to produce CBRN hazards. Use of CBRN weapons against air mobility forces represents a significant threat. Although aircrews are trained and equipped to operate in a contaminated environment, the contamination of airlift aircraft may limit options for the deployment, sustainment, and redeployment of forces. The JFC must take every precaution available to prevent the contamination of air mobility aircraft and develop plans to decontaminate aircraft which may become compromised.

(6) **Emergence of Pandemic Disease.** Regional endemic diseases are characterized by high human-to-human transmissibility and rapid onset of severe morbidity. When an endemic disease becomes pandemic, it threatens military readiness and imposes significant constraints on global air mobility operations. Although the Department of State (DOS) has a shelter-in-place policy for infected overseas areas, civil disturbance or political instability may necessitate a noncombatant evacuation operation (NEO) of noninfected individuals from areas abroad experiencing outbreaks. DOD will support the NEO with



United States Air Force C-17 aircraft dispensing flares.

USTRANSCOM and/or GCC assets when directed by SecDef to do so. DOD movement of contagious patients requires approval of the GCCs, CDRUSTRANSCOM, and SecDef in consultation with medical authorities. To prevent the spread of disease, the JFC will institute passenger screening measures. Patients with known or suspected highly contagious diseases should receive treatment in place.

c. **Threat Avoidance and Mitigation**

(1) Ideally, threat avoidance is the preferred defensive tactic for mobility aircraft. Threat avoidance tactics include over-flight, alternate routing, operating at night or in adverse weather, and using EZ operations. Since not all mobility aircraft, especially tankers, possess warning and defensive systems, they must depend upon CAP and SEAD assets for protection and threat warnings, as well as basing outside the range of antiaccess and area denial capabilities such as long-range aircraft and cruise missiles. While mobility aircraft can reduce risk through threat-avoidance tactics, commanders should consider the lack of defensive countermeasures and perform proper operational risk management prior to operating air mobility aircraft in uncertain or hostile environments. This limitation can reduce air mobility assets' flexibility to support national policy across the range of military operations and should be considered by planners of both combat and combat support missions. Therefore, using the most up-to-date intelligence from the JFC to identify potential threat locations is key to mission planning.

(2) When avoidance is not possible, threat mitigation is the next preferred option. Planners can mitigate the threat to mobility aircraft by using a variety of active and passive measures. Active protective measures include fighter escort, ground support forces

employing measures that deny potential threats from interdicting air routes, antiaircraft defenses, ballistic missile defenses and tactical lasers for airfield defense, and SEAD. Passive measures include such things as air base defense; route and altitude selection; reduced ground times; dispersed aircraft basing operating at night or in adverse weather; and self-defense systems, including the use of onboard warning receivers, flare/chaff dispensers, and CBRN detection devices. For CBRN hazards, it may not be possible to avoid aircraft contamination, especially if the mission is critical. Some measures to mitigate the effects of CBRN hazards include limiting the retrograde of contaminated cargo to "MC" cargo and identification of a theater decontamination plan for air mobility aircraft. The Services do not have the capability to conduct clearance decontamination; therefore, once an aircraft is contaminated, its utility will be restricted.

(3) **Operations Security (OPSEC).** Conduct mission planning to heighten uncertainty by threat elements concerning the location, timing, and avenues of approach. This includes employing OPSEC procedures to deny knowledge of schedules, routes, departure points, and arrival location and times. Planners should also consider employing deception when conducting operations in hostile or uncertain environments to confuse the threat about the route, timing, and location of air mobility operations.

5. Communications Systems

a. **Communication planning** integrates the communications capabilities of joint force components. These plans should include en route communications procedures and automated information systems to support movement reporting; call words or call signs, frequencies, communications equipment, and supplies to be delivered; the sequence of their delivery; and code words for significant events.

b. The most appropriate component will have responsibility for the following functions:

(1) Provide communications-electronics during air movement/aerial refueling.

(2) Develop and maintain a communications net for early operations in the objective area.

(3) Develop and maintain a communications net between the departure airfield and LZ (or arrival airfield) for airland operations.

(4) Secure rapid and reliable communications from the objective area through the communications and computer systems of geographic CCMDs and other headquarters immediately upon the arrival of airlift personnel, communications from the joint force headquarters to and between component commands, and from DOS or other agencies in the objective area.

(5) Formulate, publish, and distribute the communications-electronics operating instructions and joint communications-electronics operating instructions.

(6) Provide relay-type communications for disseminating intelligence or mission changes to the airborne force commanders while they are en route to the objective area.

(7) Provide jamming operations and coordination to prevent interference with friendly C2.

c. Various computer and communications systems along with their associated databases and peripheral equipment are included as elements of the GAMSS and are used when planning and executing air mobility operations. Use of these systems for air mobility operations is highly encouraged to facilitate the flow of critical information between operational components. These include, but are not limited to:

(1) **APEX Enterprise.** A DOD enterprise of joint policies, procedures, and reporting structures, supported by communications and computer systems, which is used by the JPEC to monitor, plan, and execute mobilization, deployment, employment, sustainment, redeployment, and demobilization activities associated with joint operations.

(2) **Global Air Transportation Execution System (GATES).** GATES is AMC's aerial port operations and management information system designed to support automated cargo and passenger processing, reporting of ITV data to IGC, and billing to AMC's financial management directorate.

(3) **Global C2 System.** Highly mobile, deployable C2 system supporting forces for joint and multinational operations across the range of military operations, anytime and anywhere in the world with compatible, interoperable, and integrated command, control, communications, computers, and intelligence systems.

(4) **Consolidated Air Mobility Planning System.** Provides air mobility mission planners with an integrated view for airlift and AR requirements management, planning, and scheduling of air mobility forces to support peacetime, contingency, humanitarian, and wartime operations. It also provides advanced user capabilities for operational planning and allocation management for AR missions, SAAMs, and GCC airlift requirements.

(5) **Global Decision Support System (GDSS).** As the primary C2 system for airlift and AR missions, GDSS provides aircraft schedules, arrival and/or departure, and aircraft status data to support ITV of aircraft and aircrews.

(6) **High-Frequency Global Communications System.** A global, high-power, communications system providing beyond line-of-sight connectivity to GAMSS forces world-wide. This includes weather information, threat warnings, emergency action messages, message relay, phone patches, automatic link establishment, Mayday transmissions, and high-frequency e-mail.

(7) **Joint Enterprise Network Manager (JENM).** JENM is an enterprise network planner and management tool used to support end-to-end services and connections to the DOD information networks. This tool supports the network architecture from a joint communication plan allowing for network connectivity across Service and geographical

lines using Internet protocol-based tactical waveforms (e.g., Wideband Networking Waveform, Soldier Radio Waveform, and Mobile User Objective System).

Additional information concerning communication system planning can be found in JP 6-0, Joint Communications System.

6. Sustainment

Operations and logistics are most effectively integrated as part of a collaborative planning process that includes subordinate component commands, supporting commands, and global providers. Equally important with planning is the active integration of sustainment movements from point of origin to point of need to ensure seamless delivery and retrograde of sustainment cargo. USTRANSCOM develops integrated distribution route structures based on the needs of the CCDRs to ensure timely performance through all segments of the joint distribution pipeline.

a. Historically, demand for items increases faster than the supply system can provide, and special management actions might become necessary. Anticipating the demand for sustainment movements requires a shared situational awareness and close collaboration between staffs during development of future plans and future operations concepts. Sustainment movements are usually a combination of push and pull resupply that requires a flexible means of modulating airlift capacity to respond to varying demand patterns and TDD parameters.

b. A key consideration during sustainment planning is the modal balance between airlift and surface movements. USTRANSCOM supports routine sustainment operations through scheduled airlift operations such as channel service and scheduled sealift via commercial liner service. Levels of transportation service for sustainment movements are often predicated on rules and transportation priorities applied during requisition or acquisition of supplies, which includes air clearance authority processes established by each service. However, there is no substitute for active planning to ensure sustainment movements are supported with the appropriate transportation mode to efficiently meet the needs of the CCDRs, Service components, and other supported organizations.

c. Routine sustainment planning usually assumes that user requirements and general air and ground security situations allow some flexibility in the actual delivery times of specific loads.

d. Combat sustainment operations reinforce or resupply units engaged in combat and permit timely return of reparable parts, often in critically short supply, to designated repair points. Once delivered to the combat zone, an inserted force may be totally dependent upon subsequent airlift operations for sustainment, movement, withdrawal, redeployment, or AE of casualties. Combat sustainment planning usually assumes that operational requirements and assessed threats allow little or no flexibility in the delivery times, locations, and load configurations. Combat requirements and cargo handling limitations at forward operating locations drive flight schedules and determine whether palletized

cargo can be handled effectively. Operational effectiveness is the primary objective, and the efficient use of aircraft and support resources is secondary.

e. Sustainment should be planned to utilize backhaul capacity. Depending on theater and user priorities, typical backhaul loads might include redeploying forces, friendly evacuees, detainees, and excess or repairable material. However, reset and reconstitution of military forces may drive scheduled retrograde movements with the same operational urgency and TDD objectives as other sustainment movements.

Additional information concerning sustainment can be found in JP 4-0, Joint Logistics, *and JP 4-09,* Distribution Operations.

7. Assessment

Assessments must be conducted prior to and during air mobility operations.

a. Prior to executing air mobility operations, consideration must be given to the following planning factors:

(1) Airfields, to include capabilities and limitations, and airland facilities available in the departure and arrival areas must be assessed, particularly those in underdeveloped countries where their status may be questionable. Mobility planners should consider runway characteristics as well as taxiway, parking, ramp, and cargo handling areas for operational suitability, and determination of MOG. Additionally, planners should consider establishing a regional air movement control center (RAMCC) to coordinate movements of civilian fixed-wing airlift in support of coalition military, humanitarian, and commercial air operations throughout the designated AOR by assigning arrival and departure times at selected airfields in the AOR and coordinating over flights. Arrival slot time coordination between the RAMCC and airlift control team ensures the MOG is not exceeded. Preplanned aircraft arrival slot times avoid ramp congestion and foster the synergistic effect of the entire rapid global air mobility force.

Additional information concerning RAMCC procedures can be found in Air Force Doctrine Annex 3-52, Airspace Control.

(2) An airfield's infrastructure also impacts the support GAMSS/JTF-PO forces can provide to the air mobility flow. The hours of operation, climatology, weather services, flight planning support, airfield lighting systems, airfield navigational aids, communications, marshalling/storage areas, and road networks are all requirements that need consideration during planning phases.

(3) Host-nation support (HNS) capability and willingness is a critical consideration in the planning phase. HNS can include diplomatic clearances, airspace access, lodging, food services, water, communications, labor, local transportation, or other types of support.

(4) Availability of fuel at support locations may limit air mobility support. POL planning/requirements should include the amount needed for aircraft and ground

equipment. Planners should consider POL storage capacity, fueling system condition and type, and dispense rates, as well as POL acquisition, either from the HN or by resupply. Aircraft fuel is usually a major limiting factor and should therefore be the primary focus. At austere locations, aerial refueling can lessen the effects of shortages in ground refueling capabilities.

b. Assessments must be conducted continuously during air mobility operations. Assessors must ensure the user's requirement is being met IAW established priorities and air mobility forces are being used efficiently and adapting to changes in the operations tempo or focus. Evaluation tools must include metrics to determine on-time delivery amount of cargo/fuel on- or off-loaded and airdrop delivery precision.

c. Continuous operational assessment that links operational objectives to airlift tasks is the key to ensuring effective employment of air mobility assets. At the same time, economy of force in air mobility operations has a global impact. USTRANSCOM and the MAF in general support all Services and government agency operational requirements simultaneously with a finite force to effectively meet the highest priority air mobility needs. Effectiveness is paramount, but economy of force in planning and execution is an essential consideration.

Additional information concerning assessment factors associated with air mobility operation planning can be found in JP 3-0, Joint Operations.

8. Multinational Planning Considerations

a. The joint planner should consider complementary multinational capabilities during COA development. However, this capability should be balanced against the potential for competition for US transportation assets to deliver those multinational units into the theater.

b. In planning for multinational operations, the joint planner should be aware of the legal considerations in providing or receiving logistics support from multinational partners. The Foreign Assistance Act, the Arms Export Control Act, acquisition and cross-servicing agreement authority, the Federal Property and Administrative Services Act of 1949 (as amended), the Fly America Act, and the Cargo Preference Acts all address the degree of support that the US can provide to or receive from other nations. In addition, specific legislative language contained in DOD authorization or appropriation acts may limit US ability to receive and/or provide logistic support from and/or to allies. The joint planner should include the legal advisor in all stages of multinational operations planning and execution for legal compliance.

c. The legal considerations of multinational support notwithstanding, air operations are an integral part of most multinational planning efforts. The multinational force air CC is responsible for air operations planning and develops a concept for integrating air operations capabilities. US CCs and multinational force commanders should provide highly trained liaison staffs to facilitate integration, coordination, and synchronization of air operations. Air planning should also include the use of logistic air assets and airfields.

It is important to ensure all planners understand the capabilities and limitations that each country brings to the fight. In the event no established multinational guidance is available, planning considerations for multinational air operations should resemble those for joint operations.

For additional information, refer to JP 3-16, Multinational Operations.

9. Other Planning Factors

a. **Materiel Collection and Classification Planning.** Because much abandoned or captured materiel or contaminated equipment may be usable by friendly forces, ground and air commanders should develop plans for their retrograde, consistent with the urgency and length of the primary mission.

b. **Planning for Mobility Air Forces Cost Avoidance Tankering.** The process of ferrying "lower-cost" fuel for use in follow-on mission legs in lieu of buying "higher-cost" en route fuel. AMC's visibility of Defense Logistics Agency cost of delivering fuel allows MAF planners to leverage economic benefit by aircraft ferrying lower-cost fuel without reducing payload or producing a negative mission impact.

c. **Planning for Detainees.** Detainee collection points should be located near air terminal facilities to aid in air evacuation but not so close that they are endangered by possible enemy targeting.

For additional information, see JP 3-63, Detainee Operations.

d. **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 accompanying patients during evacuation. Planners also need to identify the need for patient movement items and appropriate medical logisticians for support. Planners responsible for AE should ensure plans address decontaminating CBRN contaminated patients before they enter the intratheater or intertheater patient movement system unless the applicable GCC, CDRUSTRANSCOM, and SecDef approve otherwise.

For additional information regarding medical support planning and evacuation of contaminated patients, see JP 4-02, Joint Health Services.

e. **AE**

(1) **Responsibilities.** AE refers to TS en route care of patients to and between MTFs, using organic and/or contracted aircraft with medical aircrew trained explicitly for this mission. AE forces can operate as far forward as aircraft are able to conduct air operations, across the full range of military operations, and in all operating environments.

Specialty medical teams may be assigned to work with the AE aircrew to support patients requiring more intensive en route care.

Information on the AE mission, Service component and common-user systems, organizations, and C2 procedures is contained in JP 4-02, Joint Health Services.

(2) **Common-User System.** USTRANSCOM and GCCs perform common-user AE with available air mobility assets. PMs are managed through the USTRANSCOM Regulating and C2 Evacuation System. Normally, patients are evacuated from theater hospitalization to OCONUS definitive care facilities and then on to CONUS definitive care facilities. Medical evacuation is the system within the "forward/or tactical" area and is performed by dedicated, standardized medical evacuation platforms (air ambulances), with medical professionals who provide timely, efficient, and en route care of regulated or unregulated wounded, injured, or ill persons. The Army provides intratheater aeromedical evacuation to all land maneuver forces (once ashore) and also provides support to ship-to-shore and shore-to-ship PMRs. The USAF AE system provides intertheater PM support and is the vital linkage between roles of care for regulated patients of extended distances and to CONUS for final patient disposition to meet patients' definitive care needs. The JFC may use AE assets for far forward PM operations. Those efforts will be coordinated with JAOC/AOC and the joint force surgeon.

f. **Weather.** The anticipation of weather effects on operations mitigated through planning provides invaluable dividends in efficiencies on strategic mobility. Incorporation of weather considerations into mission planning is essential to mitigate risk, identify opportunity, select ideal environmental conditions, and to optimize routing and DZ/LZ selection. Planning for weather considerations is accomplished in the JAOC at the operational level.

Information on integrating weather considerations into planning is contained in JP 3-59, Meteorological and Oceanographic Operations.

g. **Withdrawal or Restaging Plan.** The withdrawal or restaging of forces by air should be done IAW the general guidelines for redeployment and extraction airlift operations.

(1) Other specific considerations that may be important to the success of these operations are local air superiority and the possible need for friendly military deception (MILDEC). 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 COMAFFOR or JFACC (if designated) should control the air movement.** GAMSS units should be placed at the departure points, if possible.

(2) **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 USAF personnel. Specific withdrawal and equipment destruction procedures are contained in appropriate Service manuals.

h. **Space Support Planning.** Friendly space-based capabilities can greatly enhance any air mobility operation. In general, space-based capabilities such as GPS signals and satellite communications (SATCOM) are readily available for use by friendly forces without needing to be requested. However, planners should be aware of possible constraints on space-based capabilities and should also assess their need for tailored space capabilities which must be requested prior to mission execution.

(1) **Constraints.** Availability of space-based capabilities can be constrained by many factors including the space environment and enemy activity. Planners should consult their weather office for environmental factors which could cause signal interference or anomalies. Additionally, planners should request intelligence assessments of enemy capability to disrupt friendly space capabilities and plan accordingly. This includes enemy jamming of GPS and SATCOM signals.

(2) **Tailored Capabilities.** Tailored space capabilities can provide additional resources toward mission success. Often times, these capabilities require intensive planning prior to mission execution and should be requested as early in the mission planning process as possible.

i. **Information Activity Planning.** Information is integral to the successful planning and execution of air mobility operations. The use of information planning in support of global air mobility operations is conducted by the AMC-matrixed staff in support of the 618 AOC (TACC) and at the theater level in the JAOC/COMAFFOR staffs. Information operations can support both offensive and defensive operations simultaneously, but mobility operations focus is primarily on defensive operations while deconflicting theater offensive operations planning. Integrating information into planning requires early and detailed JIPOE and must be an integral part of, not an addition to, the overall planning effort.

(1) **EW.** EW threat planning is critical to airlift operations. The threat of directed energy (e.g., lasers and high-power microwave) weapons, as well as the adversary's infrared and traditional electronic attack radio frequency energy capabilities to MAF operations, is increasing in sophistication and effectiveness at an accelerating rate. Mobility forces also require enhanced situational awareness, force protection, reduced radar cross section, and defensive systems to survive in the electromagnetic environment. Effective countermeasures such as flare-based defensive systems and large aircraft infrared countermeasures reduce the lethality of threats encountered when avoidance is not possible or unknown. The MAF generally accepts aircraft arrivals and departures to be in the "public domain" and are concerned with probable/likely threat in the vicinity of airfields.

(2) **Cybersecurity.** Based on mission classification, the MAF conducts mission planning on both classified and unclassified C2 systems using the SECRET Internet

Protocol Router Network and Non-classified Internet Protocol Router Network. Because threats attack our information sources and information systems at multiple locations simultaneously, cyberspace security actions are essential. The MAF must ensure Service components comply with established US Cyber Command cyberspace policy and guidance to provide well-defined boundaries with protection mechanisms (e.g., firewalls, system interoperability solutions, data management zones, and intrusion detection and protection systems) that monitor and detect unauthorized internal and external activity.

(3) **MILDEC.** MILDEC planning and execution is used to deliberately mislead adversary decision makers as to air mobility capabilities, intentions, and operations, causing the adversary to take specific actions (or inactions) that will contribute to the accomplishment of the mission.

(4) **OPSEC.** OPSEC denies the threat information required to correctly assess friendly capabilities and intentions. OPSEC planning identifies critical information to determine if air mobility plans can be observed by a threat intelligence systems. Once critical information has been identified (such as for protection reasons, force composition, movement and refueling schedules, troop and equipment), then security measures and procedures are executed to eliminate or reduce adversary exploitation. Unlike other security programs that seek to protect classified information, OPSEC measures identify, control, and protect generally unclassified mobility operations mission profiles and signatures associated with sensitive operations and activities.

(5) **MILDEC and OPSEC.** Working in tandem, MILDEC and OPSEC complement each other. Controlling access to information by denying or permitting access to specific information can shape a threats' perceptions. Through the vulnerabilities identified by OPSEC, MILDEC seeks to encourage incorrect analysis, causing the adversary to arrive at specific false deductions, while OPSEC seeks to deny real information to a threat and prevent correct deduction of friendly plans. OPSEC planning in support of the deception plan is just as important as OPSEC of the real plan, since compromise of the deception may expose the real plan. MILDEC can directly support the OPSEC plan by creating numerous false signatures and indicators. The intent is to manipulate indicators which give insight into operations. Signatures should be managed and adjusted to produce the planned effect. Air mobility operations must protect MC information identified by the supported commander for both airlift and AR operations. Appropriate deception or misinformation plans, developed early in the planning stages, may help conceal or divert attention from aircraft and troop movements. However, these plans should not jeopardize alternate plans or other operations within the area.

For more information on integrating information into planning, see JP 3-0, Joint Operation; *JP 3-13,* Information Operations, *and JP 5-0,* Joint Planning.

j. **Public Affairs (PA).** For air mobility operations, PA planners use information and knowledge gained through research to enhance the commander's understanding of the operational environment to shape the commander's initial planning guidance and intent, which must include communication considerations. Communication plans are not separate from operation planning and operations plans should include communication

considerations and activities from the beginning. Communication plans highlight higher headquarters PA guidance and messaging, identify the communication challenges or opportunities, identify and segment key publications, define communication objectives that support command/mission goals, develop measurable objectives to achieve these goals, and employ communication activities appropriate to the situation and desired outcome that do not compromise OPSEC or information security. Throughout the planning process, PA professionals lead communication synchronization with other information-related capabilities to minimize the adverse effects of inaccurate information and analysis, propaganda, violations of OPSEC, and the spread of disinformation and misinformation that could otherwise threaten US and multinational efforts.

k. **Special Technical Operations (STO) Planning.** The AMC or JAOC STO cell integrates STO capabilities in direct support of mobility operations during deployment and redeployment. The AMC STO cell coordinates with appropriate JAOC STO cells and capability providers to ensure planning and execution of STO capabilities. The JAOC STO cell is integrated into the JAOC divisions to develop the required classified annexes for STO capabilities. Effective support for the JFC's mobility requirements demands air mobility experts are integrated into the STO and that STO cell representatives understand and develop support plans to enhance mobility operations.

CHAPTER IV
AIR MOBILITY SUPPORT

"Air power is not made up of airplanes alone. Air power is a composite of airplanes, air crews, maintenance crews, air bases, air supply, and sufficient replacements in both planes and crews to maintain a constant fighting strength..."

General Henry "Hap" Arnold
General of the Air Force (1949)

1. General

Successful employment of the airlift and AR force is contingent upon establishing and maintaining a GAMSS force that enables aerial deployment, employment, sustainment, and redeployment of US forces throughout the range of military operations. Specifically, air mobility support forces provide a responsive, worldwide foundation for airlift and AR operations. This force is divided between USTRANSCOM, which controls the majority of assets in its global/functional CCMD role, and the geographic CCMDs that control other assets to meet their specific regional needs. These forces, combined with the interrelated processes that move information, cargo, and passengers, make up the GAMSS. This structure consists of a number of CONUS and en route locations, as well as deployable forces capable of augmenting the fixed en route locations or establishing operating locations where none exist. These deployable forces are stationed both in CONUS and at select overseas bases and are controlled by either AMC or one of the geographic CCMDs. Pre-positioning GAMSS forces at locations supporting sustained airlift or aerial refueling operations should be accomplished ahead of any combat force deployment.

a. The reduction in forward-deployed forces following the end of the Cold War resulted in an increased dependence on air mobility to project US military presence throughout the world. In turn, there grew an increased dependence on the GAMSS to provide rapid global air mobility. The mobile forces of the GAMSS enable the en route system to expand or contract as necessary, providing worldwide coverage and lending direct support to the rapid global air mobility concept.

b. GAMSS forces are drawn from active duty, USAF Reserve, and ANG components. Collectively, these components provide the forces that make up the fixed CONUS and overseas GAMSS organizations, as well as the deployable forces stationed primarily in CONUS. These components support operations throughout the range of military operations.

2. Air Mobility Support

a. Various Service organizations support air mobility operations by providing the operational capabilities essential for APOD reception. The USAF, through AMC's air mobility squadrons (AMSs), aerial port flights, and CRFs, provide much of the operational and logistic support needed to receive arriving aircraft. USN air cargo companies unload aircraft and operate air cargo and passenger terminals. Through its cargo transfer

capability, the Army provides the required support to interface with the CRF and begin the staging and onward movement phases for deploying personnel, equipment, and materiel. Specific Service organizations include:

CONTINGENCY RESPONSE SUPPORT: OPERATION ENDURING FREEDOM (1 JUNE–10 JULY 2010)

In February 2010, the 571st Contingency Response Group (CRG) deployed Airmen to Mazar-e-Sharif (MeS), Afghanistan, tasked by Commander, United States Transportation Command (CDRUSTRANSCOM), to establish a forward logistics base in support of the 30,000-troop surge for Operation ENDURING FREEDOM. The 571 CRG was also tasked to provide command and control, aerial port, aircraft maintenance, security, air traffic control, and logistical support (weather, intelligence, etc.). Working in conjunction with the 41st Transportation Company (TC) and Soldiers from the 82nd Sustainment Battalion (SB), the mission of this 250-member US Transportation Command Joint Task Force-Port Opening (JTF-PO) team was to build a high-speed logistics lane to facilitate the flow of US Army personnel, equipment, and supplies into Northern Afghanistan and the onward movement to other provinces. To accomplish its mission, the JTF-PO would need to dramatically increase the throughput and movement velocity of the existing airfield at MeS so it could handle a significant increase in airflow, to include commercial and military aircraft. CRGs and rapid port opening elements (RPOEs) are intimately familiar with each other's capabilities because they train and exercise together during JTF-PO validation exercises. For this mission, however, the assigned RPOE was retasked to align with another CRG to support the humanitarian relief mission in Haiti after a devastating earthquake. With no other RPOE available, agreements were generated with the 82nd Airborne Sustainment Brigade that provided tactical control of the 41st TC and direct support of a team from the 82nd Support Brigade Headquarters Staff allowing the generating of an ad hoc JTF-PO. The 41 TC provided ground movement capability to transport cargo/personnel to a forward distribution node, while 82 SB provided passenger processing and in-transit visibility and an Army perspective during negotiations with Regional Command–North (RC-N) and host nation entities. The JTF-PO worked with their German International Security Assistance Force (ISAF) hosts, RC-N leadership, and Afghan military and civilian officials to ensure smooth airfield/ramp operations, security, and communications.

The JTF-PO also built a strong relationship with the Navy Seabee element that was invaluable in the structural building of the new cargo yard and fuel farms that were essential to mission success. Finally, the JTF-PO established a close working relationship with the joint special operations task force element that provided information and intelligence for JTF-PO operations and in return were provided a section of the cargo

yard to be used as a forward area rearming and refueling point for their rotary-wing assets.

For this mission, the JTF-PO remained under the operational control of CDRUSTRANSCOM but worked in a direct supporting relationship with United States Central Command (USCENTCOM). The JTF-PO worked closely with, and provided support to, multiple agencies, including US Forces Afghanistan, RC-N of the ISAF, the USCENTCOM Joint Deployment and Distribution Operations Center, the Air Mobility Divisions at Air Forces Central Command and US Air Forces in Europe, and 618th Air Operations Center (Tanker Airlift Control Center).

The JTF-PO at MeS ensured the expeditious movement of over 18,100 short tons and 8,700 passengers, handling 824 Air Mobility Command, coalition, and commercial aircraft across two ground operations areas, while coordinating operations with multiple agencies. The JTF-PO delivered 530 mine–resistant, ambush-protected all-terrain vehicles to US counterterrorism and counterinsurgency forces at nine forward operating bases in Northern Afghanistan, providing vital, life-saving equipment for the warfighter and ensuring the security of the northern distribution network.

Various Sources

(1) **USMC Component.** During a major theater deployment, the USMC will employ a Marine air-ground task force deployment and distribution operations center (MDDOC) to coordinate all strategic, operational, and tactical lift requirements for land and air forces. The MDDOC is a standing organization located within the MAGTF command element. The MDDOC will conduct integrated planning, provide guidance, and coordinate and monitor transportation and inventory resources as they relate to management of the MAGTF's distribution process. Functions normally conducted by the MDDOC must be performed simultaneously both in garrison and forward to facilitate force generation, embarkation/deployment, debarkation, employment, sustainment, and retrograde/redeployment. The size and scope of the MDDOC scales to meet mission requirements for the size of the MAGTF it supports. In theater, the MDDOC coordinates activities per the respective CCDR theater policy and guidance.

(2) **Army Theater Sustainment Command (TSC).** The TSC is the logistics C2 element assigned to the Army Service component command (ASCC) and is the single Army sustainment (less medical) headquarters within a theater of operations. It is responsible for executing logistics and distribution capabilities for port opening, theater opening, theater distribution, and sustainment functions in support of ARFOR. Additionally, the TSC may provide lead Service support for designated common-user logistics to other USG departments or agencies, multinational forces, and NGOs as directed. The TSC manages theater distribution and executes distribution operations IAW ASCC component logistics staff officer priorities. It develops the ASCC's distribution plan and synchronizes materiel and movement management and is also responsible for coordinating the protection of theater distribution nodes. The TSC can employ one or more

expeditionary sustainment commands as an extension of its C2 capability. Each expeditionary sustainment command provides rapidly deployable, regionally focused capability for executing logistic operations that are limited in scope and scale when compared to those the TSC can support.

(3) **Army Sustainment Brigades (SUST BDEs).** SUST BDEs are subordinate commands of the TSC. All SUST BDE headquarters plan, synchronize, monitor, and control sustainment operations within their assigned area of operations. SUST BDEs are task-organized to conduct theater opening tasks, sustainment, and theater distribution tasks during the early phases of an operation or across all phases of an operation if it is the only SUST BDE in the JOA. With a different task organization, the same SUST BDE can transition to a theater distribution mission or sustainment mission. Theater opening functions set the conditions for effective support and lay the groundwork for subsequent expansion of the theater distribution system. The critical tasks for a SUST BDE in a theater opening role include: theater reception support, staging onward movement/distribution management, life support, and initial theater sustainment.

(4) **Army Aviation.** The theater airfield operations group and airfield operations battalions are organized and equipped to facilitate early entry contingencies and the establishment of expeditionary airfields in support of Army and joint aviation operations. These organizations provide expeditionary airfield management and C2 at theater-level airfields, forward operating bases (FOBs), LZs, and other areas designated by the JFC.

(5) Normally, an Army, USN, or USMC A/DACG assists the mobility forces in processing, loading, and off-loading of deploying and arriving Service component personnel and equipment; for the Army, elements of an MCT and an inland cargo transfer company typically operate the A/DACG. The capabilities of the A/DACGs are tailored based on the mission and military units performing aerial port operations. An A/DACG will:

(a) Coordinate and control the reception and/or loading of units for deployment and redeployment.

(b) Coordinate with the installation commander and the commander of each Service deploying unit.

(c) Provide a liaison to the mobility force (normally the air terminal operations center).

(d) Perform the processing, loading, and off-loading of deploying and arriving Service component personnel and equipment when no mobility force is available.

b. In addition, HNS may be used to free up reception assets and minimize the logistic footprint at the APOD and/or APOE. Close coordination with HNS activities is necessary to balance the operational requirements of all organizations competing for limited resources.

3. Capabilities of Air Mobility Support

The capabilities provided by the GAMSS are C2, aerial port operations, and aircraft maintenance. While GAMSS functions at fixed locations are robust, the deployable assets are designed to be temporary in nature with a planned redeployment or replacement. En route locations are normally tasked to provide C2, aerial port operations, and aircraft maintenance services. However, basic and other support functions (e.g., combat support, aircrew flight equipment, intelligence) can augment in-place operations, creating a more robust throughput and support capability. The level of support can be tailored to match the workload requirements. Consequently, deployable GAMSS forces can provide a method for expanding capabilities at an existing location or establishing capabilities where none exist. To ensure continuity of operations and to allow GAMSS forces to appropriately reconstitute for follow-on operations, planners should coordinate the replacement and redeployment of GAMSS forces early in the planning process.

a. **C2 of GAMSS Forces.** Air mobility support operations encompass both global/functional support and focused regional support. When GAMSS forces deploy to a GCC's AOR, command relationships should be specified before operations begin. The command relationships should specify the type and degree of control exercised by commanders in the theater, the providing commander, and the associated C2 organizations.

(1) Whether OPCON is maintained by Commander, 18 AF, or a GCC's COMAFFOR, GAMSS forces usually provide initial C2 to higher headquarters for deploying forces through organic, deployable C2 systems. In addition, they set up stand-alone C2 operations for airlift operations. GAMSS forces perform C2 functions on behalf of the higher headquarters at the local level to accurately plan, flow, and track air movements and provide ITV of equipment and passengers. C2 requirements may include various radio and SATCOM systems, as well as mobility mission planning and execution systems supporting their airfield operations, as well as those of supported air mobility aircrews that may transit or operate from their location. AMC assigned mobility support forces normally use this capability to report to the 618 AOC (TACC), while theater assigned support forces normally report to their theater AOC.

(2) Timely exchange of information within, between, and among GAMSS components is critical to mobility operations. This includes the following:

(a) Geospatial imagery intelligence and geospatial information requirements.

(b) Airspace coordination and management requirements.

(c) Restrictions imposed at airfields.

(d) CRF, STT, AMLO, and ground force assault team requirements.

(e) Unique requirements such as security and command, control, and communications for nuclear weapons.

(f) Asset ITV.

(g) Cargo, hazardous materials, passengers, and patient information.

(h) Weather information.

(i) JIPOE products and exchange of current and early warning intelligence.

(3) One of the most important features of the GAMSS is its support of ITV and mission tracking/planning. Commanders depend on accurate, timely ITV of assets to more efficiently manage those assets and associated supporting operations. Consequently, the effectiveness of the GAMSS relies significantly on integration of ITV data into a comprehensive picture. Without such integration, the ability to achieve rapid global mobility is compromised. In selected cases, SOF STTs can provide a limited initial C2 capability, both traffic control and aircraft reporting.

(4) Various computer and communications systems along with their associated databases and peripheral equipment are included as elements of the GAMSS.

b. **Aerial Port Characteristics.** An aerial port is an operating location, usually an established airfield, which has been designated for the sustained air movement of personnel and materiel. Deployed aerial port operations are sized based on forecast workload requirements. GAMSS units possess a robust aerial port capability. GAMSS units are designed to establish and operate air mobility terminals and have the ability to onload and offload a set number of aircraft based on forecast workload requirements. In addition, GAMSS aerial port specialists provide expertise to establish marshalling yards and traffic routing for cargo, aircraft servicing, passenger manifesting, and air terminal operations center services. GAMSS aerial port personnel are also responsible for the transmission of departure and arrival information to IGC, to include movement manifests and ITV data provided electronically by the moving unit. Deployable GAMSS aerial port services are not designed for long-term sustained aerial port operations. Commanders and planners should plan to backfill these deployed units quickly to allow them to redeploy and reconstitute for further use.

c. **Maintenance**

(1) GAMSS aircraft maintenance support is based on forces and materiel sourced from CONUS and OCONUS units. Planners and units receiving maintenance augmentation from GAMSS forces should consider supplementing maintenance capability as soon as practical to ensure sustained operations. Designed primarily to support mobility aircraft operations, deployable GAMSS maintenance units are not intended to provide sustained maintenance.

(2) Deployable units providing aircraft maintenance capability are contingency support elements (CSEs) and maintenance recovery teams (MRTs). Maintenance CSE packages are tasked to established locations for a specified amount of time to provide limited support for specific mission(s) flow. CSEs are normally deployed as part of a CRF to set up or work from an austere location. Their capability is essentially limited to basic ground handling and routine servicing operations. MRTs are small teams consisting of

specific maintenance specialties tasked to provide aircraft troubleshooting and repair for a specific aircraft requirement.

4. Global Air Mobility Support System Elements

Several USAF MAJCOMs possess GAMSS elements. AMC GAMSS forces are aligned under the USAF Expeditionary Center's administrative control, with assets at fixed overseas locations, as well as CONUS-based deployable assets. Unless otherwise directed, Commander, 18 AF, retains OPCON of deployed GAMSS forces.

a. **GAMSS fixed assets** are sized, manned, and equipped to support peacetime common-user air mobility operation. Fixed assets consist of the following:

(1) **Contingency Response Wing (CRW).** AMC has one CRW that is organized to produce deployable CRFs, building partner forces, rapid AMD augmentation, and AMLOs. The CRW as an organization does not deploy. However, it coordinates the readiness and deployment of subordinate contingency GAMSS elements providing expeditionary en route support, airbase opening, support for building partner capacity, rapid AMD augmentation, and AMLO capabilities. These forces deploy on order from CDRUSTRANSCOM or 18 AF/CC. CRW elements are designed for a decreased transportation and logistics footprint to support short duration operations or as a quickly deployable force that can support mission requirements until a more robust unit can deploy for a longer duration. CRFs deployments do not normally exceed 45 days. Written approval from the commander with OPCON authority is required to use CRF assets and personnel to support any non-primary mission requirement. The C2 of GAMSS elements follows the normal C2 pattern of air mobility forces.

(2) **Air Mobility Operations Wings (AMOWs).** AMOWs are located overseas and provide a single-commander, distinct-mission capability with the appropriate level of authority to ensure response time and agility to meet changing theater requirements and support the CCDR.

(a) **Air Mobility Operations Groups (AMOGs).** AMOGs are located overseas and composed of AMSs. AMOGs formulate plans; establish procedures; and direct the administration of their subordinate AMS, operating locations, and detached units in support of operations. The AMOG provides logistics, intelligence, and air transportation planning to meet operational requirements.

(b) **AMSs.** AMSs are situated at key overseas en route locations to operate air terminal facilities in support of the DTS for numerous DOD common users. AMS personnel generate, launch, and recover air mobility missions and en route support aircraft. Each AMS operates an air mobility control center, which tracks air mobility missions and serves as the C2 conduit to the 618 AOC (TACC) and theater AOC/AMDs executing DTS missions.

b. **GAMSS** deployable assets are tailored to meet mission requirements, designed for a decreased transportation and logistics footprint, and are not designed as long-term assets. Training for members of these deployable assets consists of CBRN and weapons

training. These assets are equipped and manned to support the contingency and/or wartime air mobility operation. The deployable assets consist of the:

(1) **CRG.** The CRG is an organization tasked to deploy to secure, assess, open, and initially operate airbases for the USAF component of their CCMD. The CRG may initially represent the senior USAF leadership and, for this reason, the CRG is normally commanded by an O-6. The groups consist of a standardized force module dedicated to the base opening task. This module includes a tailored section of all forces needed after seizure, or handoff from seizure forces, to assess and maintain security of an airfield, establish initial air mobility C2, and operate the flow of air mobility into and out of the airfield. CRGs may open the airfield for the USAF, another Service, or even a multinational force partner. To ensure continuity of operations, CRGs coordinate with USTRANSCOM, AFTRANS, theater COMAFFOR/JFACC staff, and follow-on forces to expedite and synchronize transfer of authority to sustainment forces and the development of host unit support agreements. CRGs are comprised of approximately 115 personnel with a capability to support a continuous working MOG of two aircraft for 24-hour a day operations. CRGs may be augmented with various support forces to meet unique mission requirements, such as explosive ordnance disposal or rapid engineer deployable heavy operational repair squadron engineer, which provides initial airfield assessment and expedient construction/repair capabilities for some scenarios.

(2) **Air Mobility Operations Squadron (AMOS).** An AMOS trains and equips personnel to augment geographic AOC/AMD positions and provides personnel to manage assigned mobility forces in support of contingency operations; humanitarian efforts; and unilateral, joint, and combined exercises. AMOS personnel, when deployed to a geographic AOC/AMD, will normally be under the direction of the AMD chief and AOC commander.

(3) **CRE.** A CRE is an expeditionary C2 force responsible for providing continuous on-site air mobility operations management. It is a temporary organization commanded by a commissioned officer that deploys to provide air mobility mission support when C2, mission reporting, and/or other support functions at the destination do not meet operational requirements. In addition to providing C2 and communications capabilities, CREs provide aerial port, logistics, maintenance, force protection, weather, medical, and intelligence services, as necessary. CRE size is based on projected operations flow and local conditions. CREs are comprised of approximately 58 personnel with a capability to support a continuous working MOG of two aircraft for 24-hour a day operations.

(4) **CRT.** A CRT is an expeditionary C2 force that performs the same functions as a CRE but on a smaller scale. CRTs are comprised of 11-30 personnel and normally led by a non-commissioned officer. They provide a level of aerial port and C2 services capable of supporting a working MOG of one aircraft for 12-hour a day operations, with 24-hour C2 coverage.

(5) **CSE.** A CSE consists of personnel and equipment providing specific contingency support capabilities other than core C2 such as a contingency air load planning team, joint air cargo inspections, or an airfield survey team. They may be deployed as an element of CRE or CRT, or as a small scale, stand-alone capability. These teams may require base operating support (BOS).

(6) **USN Support to the GAMSS.** USN air cargo companies are units subordinate to both active duty and reserve component USN cargo handling battalions. They may augment the USAF's aerial port operators or conduct independent aerial port operations. They interface with USN fleet logistics and AMC's air operations.

c. GAMSS capabilities include:

(1) C2,

(2) Aerial port,

(3) Aircraft maintenance, and

(4) Other CSEs.

(a) **Airfield Survey Team.** These personnel are trained and equipped to deploy to airfields, assess the capabilities of the airfield and its supporting facilities, and relay that information to the appropriate authorities who deploy any needed augmentation or engineer forces.

(b) **AMLO.** For detailed discussion on AMLOs, see Chapter II, "Command and Control of Air Mobility Operations," subparagraph 4.d.(10), "AMLOs."

(c) **Airlift Control Flight (ALCF).** ALCFs are part of the GAMSS that are gained by AMC. Personnel deployed from the ALCFs perform the core C2 functions of a CRE or CRT. Additional capability beyond C2 such as aerial port and aircraft maintenance are sourced and tasked elsewhere (typically from the CRWs or various mobility wings).

(d) **En Route Patient Staging System (ERPSS).** ERPSS is a deployable asset for temporary staging, casualty care, and administration support during contingency operations. It is located at designated transportation hubs to support the en route care of patients in the AE system. ERPSS holding capability is 2-6 hours for patients in the tactical environment entering the patient movement system and up to 24 hours at en route strategic locations. The ERPSS requires logistical, clinical, ancillary medical, and administrative support from the supporting base. The ERPSS may be augmented with additional personnel and equipment to increase casualty staging capability as needed.

(e) **Security Forces.** Air mobility missions operate in areas where a threat may exist. To mitigate these threats and provide limited aircraft security when appropriate base defense forces are not present, AMC maintains deployable security forces called Phoenix Raven teams comprised of individuals trained and equipped to provide protection of the aircraft when transiting high-risk areas. These forces may be augmented by CCDR-controlled fly-away security teams, who are trained to meet requirements to detect, deter, and counter threats to personnel and aircraft at deployed locations by performing close-in aircraft security and advising aircrew on dealing with detainee personnel. These forces may be part of an airfield opening effort but do not provide sustained primary airfield security.

OPERATION UNIFIED RESPONSE (14 JANUARY–20 FEBRUARY 2010)

On 12 January 2010, the country of Haiti was ravaged by a magnitude 7.0 earthquake that devastated the capital city of Port-au-Prince and caused an estimated 112,000 deaths and 194,000 casualties.

Special operations forces (SOF), including an Air Force special tactics team, arrived at Toussaint Louverture Airport on the evening of 13 January 2010 to conduct austere airfield operations. Within hours, United States Transportation Command (USTRANSCOM) deployed an Air Force assessment team to assess airfield status and prepare for the joint task force-port opening (JTF-PO) main body arrival. The 818th Contingency Response Group (CRG) assessment team consisted of a CRG commander, an expeditionary mobility operations subject matter expert, an airfield operations officer, two civil engineering pavement specialists, a communications specialist, and a security forces specialist.

Shortly behind this small team was the first real-world use of an entire Air Force CRG and Army Rapid Port Opening Element (RPOE) combined. The 817 CRG and 688 RPOE joined to form USTRANSCOM's JTF-PO. Their mission was to safely run aerial port operations and maximize humanitarian assistance throughput at the relatively small, single-runway airport. After waiting in the holding pattern of Toussaint Louverture International Airport in Port-au-Prince for 2.5 hours, the joint assessment team (JAT) stepped off the aircraft the morning of 14 January to chaotic conditions.

The parking area at Toussaint Louverture only had 10 spots for large aircraft. Prior to the JAT's arrival, aircraft were parked close together and the airfield was crowded with all manner of trucks and people resulting in dangerous aircraft ground operations. If an accident occurred on the airfield's only runway, it could shut down the only major airport in Haiti—with disastrous consequences for the relief effort. The JAT immediately began inspecting the control tower, passenger terminal, and areas for the JTF-PO main body use immediately upon arrival.

A couple of hours after the JAT landed, the JTF-PO commander and main body arrived on five C-17s. The team immediately began coordinating bed-down and operations efforts with the JAT, SOF controllers, special tactics teams, and Soldiers from the 688th RPOE. On the periphery of the busy airfield, a 26-man security forces (SFs) team set up a layered defense of the damaged perimeter. It soon became apparent more SF assistance was needed. On 24 January, a squadron of SF airmen from the 820th Base Defense Group, Moody Air Force Base, Georgia, arrived and began working alongside JTF-PO defenders to fully secure the airfield.

The JTF-PO brought order to the parking area by controlling the flow of aircraft. A CRG maintenance crew chief was assigned to the SOF special tactics teams who were directing aircraft ground and air traffic. This Airman's role was approving movement into the parking areas and assigning parking locations to arriving flights, preventing taxiway bottlenecks, and delays. Within a day, this logistical solution doubled the number of aircraft transiting the airfield. Due to the myriad of aircraft supporting the relief effort and a lack of compatible ground handling equipment, foreign aircraft were often unloaded by hand.

The JTF-PO airfield manager developed a close working relationship with his Haitian counterparts that proved invaluable to quickly and efficiently solving countless problems across the airfield. Based on this relationship and recommendation of Haitian airfield authorities, the Haitian prime minister transferred airfield management responsibility to the JTF-PO team.

Joint Task Force-Port Opening (JTF-PO): Port-au-Prince, Haiti

5. Airfield Opening and Global Air Mobility Support System

a. GAMSS forces may be the first USAF presence on an expeditionary airfield regardless of how the airfield is gained (e.g., seizure or acceptance from a HN) or which follow-on US or multinational entity will operate the airfield. When opening an airfield, GAMSS forces normally coordinate actions with theater command elements to ensure theater-specific responsibilities, such as force protection, meet mission requirements. All deployed GAMSS forces should integrate with the host organization to the maximum extent possible for force protection and communications. Additional issues that should be considered during planning are: the handoff of the airfield from any seizure force to the CRG or other GAMSS element, the CRG/GAMSS element to follow-on sustainment unit or HN forces, and redeployment and reconstitution of the CRG/GAMSS.

b. **Air Mobility Support Planning**

(1) Successful deployment and employment of forces and materiel depend upon timely and accurate planning of all US and coalition supported and supporting components. The GAMSS is an integral part of the air mobility force, and its integration into the initial deployment flow is critical to any effective planning process. Although relatively small in

numbers, GAMSS forces fill a vital niche, and successful accomplishment of air mobility operations hinges on this support. Defined areas of operations and responsibilities for GAMSS personnel should be specified during planning of seizure/airfield opening operations.

(2) These forward-deployed forces may augment the JDDOC in managing the deployment of intertheater and intratheater assets for the supported CCDRs and, when a contingency is complete, the redeployment of forces. Their effectiveness is directly related to a commander's understanding of a number of planning factors. Each factor needs careful consideration to ensure the GCC's requirements and objectives are achieved. All these factors are interrelated and, therefore, should not be considered in isolation. To ensure adequate support, coordination between GAMSS forces and theater planners should occur. The following planning factors, while not all-inclusive for every operation, give commanders the parameters involved in the proper use of GAMSS forces.

(3) **Fundamental Considerations.** Within the overall mobility support-planning framework, there are four fundamental considerations: task, threat, core capabilities, and timing.

(a) **Task.** Although specific circumstances and deployed locations may vary and the GAMSS composition will change, the operational task and purpose of the GAMSS remains constant. The basic requirement is to deploy GAMSS forces to a location where they either establish operations at a previously unsupported base or augment the in-place or permanent en route support system to conduct mobility support to worldwide common users. Worldwide taskings for GAMSS forces center on this operation. The fixed infrastructure is composed of CONUS and overseas en route locations. This entire network is the foundation for GAMSS operations and their locations provide C2, logistics, and aerial port services to meet DOD operational requirements.

(b) **Threat.** CCDRs should always be alert to the possible threats facing GAMSS forces. This includes noncombat missions like humanitarian support missions. Forces may face threats to security from individuals and groups, as well as military and paramilitary units. Threat assessments should be conducted in consultation with intelligence, security forces, counterintelligence forces, medical planners, interagency partners, and in-country diplomatic and defense liaison personnel. A provision for force protection is required for any operation. The threat assessment will determine the level of force protection required. It may be necessary to consider delaying deployments until the situation and area are stabilized. Threats can directly affect the flow of air mobility operations and objectives of the JFC. Although GAMSS forces are trained to protect themselves against both conventional weapons and CBRN threats and hazards, they should be augmented by a dedicated force protection element whenever the assessed threat affects operational success.

(c) **Core Capabilities.** The capabilities of the trained GAMSS forces are a fundamental consideration. These forces have unique capabilities. They have multiple technical qualifications and are packaged as deployment modules. They train as modules and every effort should be made to deploy them as such. This training, experience, and

organization makes them ready for autonomous operations in uncertain environments. Consequently, commanders must carefully manage their allocation against prioritized requirements.

(d) **Timing.** The timing of force movements is a critical consideration. GAMSS forces usually preposition upon receipt of the CJCS warning/alert order. This early positioning enables effective airlift and aerial refueling operations. GAMSS forces are sequenced early in the TPFDD or deployment order (DEPORD) planning. For large-scale mobility operations, this early integration in the deployment flow ensures APODs are prepared to receive cargo and passengers.

c. **Planning Considerations.** There are additional planning considerations impacting throughput and affecting operation or campaign objectives.

(1) **Footprint.** The number of people, the amount of equipment deployed for an operation, and the physical space they occupy on the ground comprise the footprint of the force. The scale of any operation determines the footprint, but the proper balance of people and equipment and using the reachback concept can minimize the footprint of deployed forces. As footprint size increases, more airlift is required to support these forces and less airlift is available to meet other JFC requirements. Diplomatic restrictions may affect the size of a footprint. A HN may limit the number of foreign personnel on its soil, making the need for reachback support even more crucial. Paring and tailoring of forces based on the in-place infrastructure can also reduce the footprint. This reduction allows airlift assets to be reassigned for other priority taskings.

(2) **BOS and Expeditionary Combat Support (ECS).** GAMSS forces may deploy with limited or no organic BOS or ECS assets. Therefore, the supported commander should be prepared to meet the additional requirements of GAMSS forces. If tasked to augment theater-assigned BOS or ECS personnel, the GAMSS force commander can plan for and deploy with additional support personnel.

(3) **HNS.** Deployed operations always rely to some extent on HNS. HNS can include diplomatic clearances, airspace access, lodging, food services, POL, water, communications, labor, or other types of support. Assessment of HNS capability and willingness is a critical consideration in the planning phases. Shortfalls in HNS are normally overcome through additional supply efforts including contract support. If this assessment is not accurate, forces will not have adequate support to conduct operations or finite transportation capacity will be wasted on cargo already available at the deployed location. Use of HNS agreements can be an effective force enabler and force multiplier. Obtaining local labor support from the HN affords US forces economy of force. The force multiplying effect is the reduced airlift required for force support. Footprint size is also dramatically reduced when HN services and support are maximized. To comply with congressional oversight, HNS should be tracked and reported to the applicable command element.

(4) Contracted support can be a significant force multiplier. Operational contract support provides tools and processes to manage the variety of services that may be required

to support air mobility operations (i.e., base operational support, transportation, and security). Contracted support and its associated contractor management challenges must be integrated early in the operation planning process.

For more information on operational contract support, see JP 4-10, Operational Contract Support, *and DODI 3020.41,* Operational Contract Support (OCS). *For detailed information on planning operational contract support, see CJCSM 4301.01,* Planning Operational Contract Support.

(5) **Diplomatic Clearances.** Diplomatic clearances are crucial planning considerations. These types of clearances include aircraft overflight and landing rights, communications connection approval, personnel visas, and other entry requirements. No TPFDD, DEPORD flow, or sustainment channel mission can occur without appropriate clearances obtained in advance. Without these clearances, the ability of GAMSS forces to enable rapid global mobility can be halted. Diplomatic clearances impact footprint, throughput, force protection, and, ultimately, operational success and should be acquired prior to execution of a TPFDD or DEPORD.

CHAPTER V
AIRLIFT

" The actual operation of a successful airlift is about as glamorous as drops of water on stone. There's no frenzy, no flap, just the inexorable process of getting the job done. In a successful airlift, you don't see planes parked all over the place; they're either in the air, on loading or unloading ramps, or being worked on."

Major General (later Lieutenant General) William H. Tunner,
Combined Airlift Task Force Commander for the Berlin Airlift, 1948

1. General

a. **Airlift operations transport and deliver forces and materiel through the air in support of strategic, operational, and/or tactical objectives.** Airlift offers its customers a high degree of speed, range, and flexibility. Airlift enables commanders to respond and operate in a wide variety of circumstances and time frames that would be impractical through other modes of transportation.

b. Airlift supports the US national military strategy by rapidly transporting personnel and materiel to and from or within a theater. **Airlift is a cornerstone of global force projection.** It provides the means to rapidly deploy and redeploy forces, on short notice, to any location worldwide. Within a theater, airlift employment missions can be used to transport forces directly into combat. To maintain a force's level of effectiveness, airlift sustainment missions provide resupply of equipment, personnel, and supplies. Finally, airlift supports the movement of patients to treatment facilities and noncombatants to safe havens. Airlift's characteristics—speed, flexibility, range, and responsiveness—complement other US mobility assets.

2. Airlift Operations

Airlift operations are defined by the nature of the mission rather than the airframe used. Most aircraft are not exclusively assigned to one operational classification. In fact, the vast majority of the air mobility force is capable of accomplishing any classification of airlift. Intertheater and intratheater capabilities are available to all users of USAF airlift.

a. **Intertheater Airlift.** Intertheater airlift provides the critical link between theaters.

(1) During deployment operations, intertheater airlift requirements, while significant, are to a large degree predictable. Such requirements normally are identified in the TPFDD associated with a particular operation plan (OPLAN) or OPORD. A TPFDD can be tailored to meet specific requirements when the mission is not aligned with an OPLAN or modified to meet the requirements associated with a particular COA. TDD resupply via airlift from CONUS to the theaters is critical in maintaining the flow of materiel necessary to sustain operations. This concept uses both military and

commercial aircraft to support the sustainment flow that must begin as soon as deployment operations begin.

(2) **A key strength of airlift is its ability to quickly redeploy forces from one theater to another.** Airlift enables commanders to rapidly reposition forces between theaters, thereby deterring threats from acting when US forces are engaged elsewhere.

(3) Diplomatic overflight and landing clearances are key to establishing an efficient air bridge for deployment of TPFDD forces and sustainment. En route aircraft clearances may be denied to aircraft suspected of having been contaminated. The diplomatic clearances are processed IAW Department of Defense Directive (DODD) 4500.54E, *DOD Foreign Clearance Program (FCP).*

(4) The JFC must anticipate that formerly contaminated aircraft may be removed from intertheater airlift operations.

b. **Intratheater Airlift.** Intratheater airlift provides air movement of resources, personnel, and materiel within a GCC's AOR. Typically, aircraft capable of accomplishing a wide range of operational and tactical level missions conduct these operations. Intratheater operations provide both general support, usually through common-user airlift in response to the JFC's movement priorities, and direct support, normally using GCC-assigned and attached common-user air mobility forces. Additionally, Service-organic airlift assets are responsive to the Service CC's priorities. Intratheater airlift requirements include TPFDD force movements and the continuation of sustainment movements arriving in the theater, as well as on-demand movements and routinely scheduled airlift missions for the movement of non-unit related cargo and personnel.

(1) Unit movements within the theater are in response to the JFC's operation or campaign plan. Once combat units are deployed to a theater, the JFC may use intratheater airlift to maneuver forces to exploit weaknesses in the adversary's position. In this capacity, airlift allows the JFC to reposition forces expeditiously, achieve surprise, and control the timing and tempo of operations.

(2) Movements within a theater also permit the continuing resupply of forward units. These requirements normally are predictable, regular, and quantifiable when the forces are not engaged in combat operations. During pre- or post-hostilities, these requirements can usually be fulfilled through a fixed resupply schedule. However, once forces are engaged, resupply requirements increase dramatically and become more unpredictable and variable. The ability of airlift to rapidly and flexibly accommodate the critical resupply requirements of units engaged and operating in such a dynamic environment provides commanders with an essential warfighting capability.

3. Airlift Missions

The primary mission of airlift is passenger and cargo movement. This includes combat employment and sustainment, AE, special operations support, and OSA. USAF airlift forces perform these missions to achieve strategic-, operational-, and tactical-level

HUMANITARIAN RELIEF OPERATION: TSUNAMI SUPPORT

On 26 December 2004 an undersea earthquake struck the Indian Ocean, triggering a series of devastating tsunamis along the coasts of most bordering landmasses. With waves up to 100 feet, the tsunami killed more than 225,000 people in eleven countries, and inundated coastal communities. It was one of the deadliest natural disasters in history.

The plight of the many affected people and countries prompted a widespread humanitarian response. In all, the worldwide community donated more than $7 billion (2004 US dollars) in humanitarian aid, which was needed because of widespread damage of the infrastructure, shortages of food and water, and economic damage. Epidemics were of special concern due to the high population density and tropical climate of the affected areas. The main focus of humanitarian and government agencies was to provide sanitation facilities and fresh drinking water to contain the spread of diseases such as cholera, diphtheria, dysentery, typhoid and hepatitis. There was also a great concern that the death toll could increase as disease and hunger spread. However, because of the initial quick response, this was minimized.

Operation UNIFIED ASSISTANCE, controlled by Combined Support Force (CSF) 536, delivered 6,685 passengers, 5,444 cargo tons of relief supplies and medical aid. With a focus on air mobility as opposed to combat operations, CSF 536 showcased how Air Mobility contributes to humanitarian relief operations as part of a multinational effort that included nongovernmental organizations.

Brigadier General Jan-Marc Jouas, US Air Force,
Director, Air Component Coordination Element
Operation UNIFIED ASSISTANCE

objectives across the range of military operations. Normally, movement requirements are fulfilled through regularly scheduled channel missions over fixed-route structures with personnel and cargo capacity available to all customers. These regularly scheduled requirements are validated through the appropriate Service organization to USTRANSCOM or GCC and then tasked by the 618 AOC (TACC), an AMD, or another appropriate C2 node. Depending on user requirements, requests not supportable through the channel structure can be fulfilled through use of other mission categories such as SAAM, exercise, and contingency missions. Requests that cannot be satisfied by any of the above missions may be referred to other transportation modes of the DTS. The airlift system has the flexibility to surge and meet requirements that exceed routine, peacetime demands for passenger and cargo movement. For example, during Operation ENDURING FREEDOM (OEF) and Operation IRAQI FREEDOM (OIF), new channel routes and structures were established to support significantly increased airlift demands.

a. **Combat Employment and Sustainment.** Combat airlift missions are missions that rapidly move forces, equipment, and supplies from one area to another in response to changing battle conditions. Combat employment missions allow a commander to insert

surface forces directly and quickly into battle and to sustain combat operations. For example, combat missions may involve airdropping paratroopers behind adversary lines. Combat sustainment missions may consist of reinforcement of front-line forces engaged with the enemy. Airlift affords commanders a high degree of combat maneuverability permitting them to bypass adversary troop strongholds. This provides friendly forces a potent offensive advantage and complicates the adversary's defensive preparations. The combat employment and sustainment mission usually accounts for a small percentage of total airlift sorties; nevertheless, its importance is far greater than the number of sorties indicates. This is a capability which, in most circumstances, cannot be accomplished by other means.

(1) While this mission provides significant capabilities, it also carries substantial risk. Success in combat and combat support hinges on air superiority and threat avoidance. This requires accurate and timely intelligence regarding threats along the ingress and egress routes and over the target area. Once delivered to the target area, the inserted force may be totally dependent upon subsequent airlift operations for sustainment, movement, withdrawal, or redeployment.

(2) Another important aspect of combat employment and sustainment is the concept of **forcible entry.** In performing this mission, airlift forces are usually matched with airborne, air assault, light infantry, or special forces specifically designed for delivery by air. This mission normally involves inserting airborne forces via airdrop and will most likely require integration with combat air forces (CAF) who will provide SEAD and escort operations. However, carefully planned airland assault operations can be equally effective. An example of intertheater forcible entry operations is the airdrop capability that the USAF provides for the Army.

For more information, see JP 3-18, Joint Forcible Entry Operations.

(3) **Deployment and Sustainment in Nonlinear Operations.** In nonlinear operations, forces orient on objectives without geographic reference to adjacent forces. These operations require significant airlift/aerial delivery support for each deployment and continued sustainment. Nonlinear operations were applied during Operation JUST CAUSE. The joint forces oriented more on their assigned objectives (e.g., destroying an enemy force or seizing and controlling critical terrain or population centers) and less on their geographic relationship to other friendly forces. Nonlinear operations place a premium on air mobility.

b. **AE.** AE is the movement of patients under medical supervision to and between MTFs by air transportation. AE specifically refers to USAF-provided movement of patients using organic and/or contracted mobility airframes with AE aircrew trained explicitly for this mission. Movement of patients requires special ATC considerations to comply with patient-driven altitude and pressurization restrictions, as well as medical equipment approved for use with aircraft systems. Several processes occur once validated PMRs have been identified.

THE EFFECTIVENESS OF AIRLIFT

When Princess Patricia's Light Infantry Regiment, a Canadian unit with 850 troops and 1500 tons of equipment, redeployed from Kandahar, Afghanistan, following their tour supporting Operation ENDURING FREEDOM in 2002, United States Transportation Command (USTRANSCOM) determined airlift was the best mode available. The Air Mobility Command (AMC) had several options, including what type of aircraft to use and the route they would fly. In the end, C-5s were used in a stage operation based in Diego Garcia in the Indian Ocean. Five C-5s, six complete aircrews, 50 maintainers and aerial porters, and a planning staff were prepositioned at Diego Garcia. Because of the fuel requirement, the C-5s could not carry their maximum cargo loads and fly nonstop from Afghanistan to Diego Garcia, so enroute air refueling was required. This allowed the C-5s to fly at their maximum cargo weight, which decreased the number of aircraft and sorties into Kandahar by half.

This operation highlights two key points: first, it shows the Commander, USTRANSCOM, as a warfighting commander with the appropriate authorities to determine resource allocation. Had C-17s been used, it would have required 45 sorties, as opposed to 28 C-5 sorties. The aircrews flew tactical arrivals and departures, and ground personnel conducted engine running onloads to minimize ground time in Kandahar- ground times were cut to as little as 25 minutes, vice the normal 3 hours, 15 minutes. Most of this time savings was due to eliminating the ground refueling requirement. Minimizing the number of aircraft and sorties maximizes safety in all cases, but it is especially important in combat zones.

The second point this operation highlighted was the fact that often it is better to use a supported/supporting command relationship. There are times when it's more effective to delegate operational control of aircraft to the supported combatant command component commander, but many times it is more effective to pass tasking requirements to USTRANSCOM and let AMC draw from its entire air mobility fleet and utilize its vast command and control and planning resources to conduct the operation.

Various Sources

(1) The aeromedical evacuation control team (AECT) within each theater's JAOC/AOC performs AE operational mission planning, tasking, scheduling of airlift and AE assets to support PMRs during intratheater and intertheater missions. The AECT responds to PM requests that have been validated by the PMRC.

(2) For contingency or wartime operations, the AECT provides AE C2 for assigned and attached AE forces. The AECT is the source of AE operational expertise within the AMD. The AECT will coordinate AE operational mission planning, tasking,

AEROMEDICAL EVACUATION SUCCESS STORY

The ability to use virtually any aircraft on-site or in-system (vice the old system of dedicated aeromedical evacuation [AE] aircraft) provided a quick response to casualty movement requirements. Air Mobility Command AE forces supported approximately 7,847 patient movements between 1January and 20 May 2004. "Some of the guys are hurt pretty bad (sic). I wish that I could help them somehow, but the most I can do is make sure the aircraft are configured right before every launch, make sure that there is always a crew that is ready to fly, and that the aircraft launches on time. You will never know how much it means to me that I have had the opportunity to participate."—Deployed AE support troop, in email home.

General John W. Handy, USAF, *Operation Iraqi Freedom - Air Mobility By The Numbers* (Headquarters Air Mobility Command, October 1, 2003)

scheduling, and execution of airlift and AE assets to support PM in coordination with the PMRC. The AECT will work closely with other JAOC divisions and teams to ensure AE missions are completely integrated into the ATO.

(3) Intertheater AE will typically be OPCON to USTRANSCOM with C2 provided by the 618 AOC (TACC) and is accomplished using designated or retrograde organic AE aircraft. Alternatives to organic AE aircraft may be pursued when competing airlift or evacuee requirements reduce airframe availability. These alternatives could include use of other organic military airlift, contracted commercial passenger aircraft, or authorization for commercial travel for ambulatory patients who do not require in-flight supportive medical care.

(4) Use of contracted commercial aircraft for AE is dependent on the threat in the region. Normally, civilian aircrews are neither trained nor equipped to fly in contaminated conditions. Except in very limited circumstances involving contracting for specialized air ambulance services, commercial aircraft will not be used to move contaminated or contagious patients.

(5) Intratheater AE is the movement of casualties and/or patients within the theater of operations by aircraft directly or laterally to hospitals or to definitive care within



A variety of operational support airlift aircraft illustrate the variety of airlift missions.



Aeromedical evacuation missions require use of medical equipment approved for use with aircraft systems.

the theater. Intratheater-assigned AE forces will be OPCON to the GCC with C2 provided by the GCC's JAOC to provide ITV of PMs and a handoff to the 618 AOC (TACC) for intertheater lift using designated or retrograde organic AE aircraft.

Further information on AE PM can be found in JP 4-02, Joint Health Services; *AFTTP 3-3.AOC,* Operational Employment–Air and Space Operations Center; *Air Force Doctrine Annex 3-17,* Air Mobility Operations; *and AFTTP 3-42.5,* Aeromedical Evacuation.

c. **Special Operations Support.** Specified airlift forces provide unique airland and airdrop support to SOF. Since there are a limited number of airlift assets dedicated to this mission, the principle of economy of force is particularly applicable. When performing special operations missions, highly trained airlift and AR crews normally act as an integral member of a larger joint package. Because these airlift missions routinely operate under adverse conditions in a hostile environment, extensive planning, coordination, and training are required to enhance mission success. Airlift and AR used in a special operations role provides commanders the capability to achieve specific operations or campaign objectives, which may not be feasible through more conventional airlift practices.

d. **OSA.** OSA is the movement of high-priority passengers and cargo with time, place, or mission-sensitive requirements. OSA missions are a special classification of airlift mission support to provide for the timely movement of limited numbers of priority personnel or cargo. The OSA aircraft fleet consists of executive and non-executive aircraft. Executive aircraft are dedicated to the airlift of DOD and federal senior officials

and DOD-approved senior officials. Non-executive aircraft support passenger and cargo airlift during peacetime but also support CCMD wartime requirements during conflict. USTRANSCOM is responsible for the scheduling and tasking of OSA operations regarding CONUS-based assets while the Services validate OSA requests. Theaters with their own OSA aircraft are responsible for scheduling and execution tasking of OSA operations within their AORs. Within a theater, OSA assets and their scheduling should reside with their respective Service component and may be made available for tasking at the CCDRs direction.

Further information on OSA missions can be found in DODD 4500.56, DOD Policy on the Use of Government Aircraft and Air Travel, *and DODI 4500.43,* Operational Support Airlift (OSA).

(1) In theory, almost any aircraft could contribute to the intratheater effort. In practice, however, the bulk of intratheater missions are normally done by fixed-wing aircraft provided by the USAF component, while some limited or specialized missions may be accomplished by fixed-wing 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. Additionally, the Services operate more specialized fixed-wing transports capable of performing TS/MC requirements for forward-deployed units. TS/MC missions are those that are generally unplanned in nature and which respond to the supported commanders' immediate operational or tactical requirements.

(2) It is often difficult to view the relative contributions of the components of the joint force in isolation. Each is critical to the success of a joint operation and each has unique capabilities that cannot be duplicated. Common-user airlift achieves an economy of force. Rather than each Service and non-DOD agency providing its own airlift, airlift is consolidated and tasked to support all organizations. While different types of operations will have varying requirements, the following highlights some of the airlift requirements of the various organizations that use common-user airlift.

(a) **USTRANSCOM.** GAMSS forces normally deploy early in an operation to establish en route and destination support. This may consume a large portion of the first airlift missions.

(b) **Army.** Even though the Army has significant organic airlift assets, it often has the largest requirement for common-user airlift. ARFOR rely heavily on intertheater and intratheater airlift for deployment, airborne operations, and redeployment of personnel and early arriving or departing unit equipment. Sustainment is also moved during deployment, but its delivery must frequently be balanced against force deployment or redeployment requirements because these operations share the same deployment and distribution infrastructure and other resources. The Army's pre-positioning program also requires significant airlift to move troops to designated locations to link up with prepositioned equipment.



Limited or specialized missions may be accomplished by fixed-wing and rotary-wing aircraft provided by Services other than the Air Force.

(c) **USN.** Sustainment and combat readiness of deployed naval forces depends on flexible and highly responsive intertheater airlift support. Afloat naval forces normally serve as a force enabler and consequently require the least amount of common-user airlift support. However, the USN depends on common-user airlift to sustain forward-deployed operations with personnel, materiel, and mail from CONUS to overseas bases. The Navy depends on organic, land-based, fleet-essential airlift assets to transport passengers and cargo intratheater from the APOD to forward logistics sites for further transfer to fleet units. Naval organic airlift, known as Navy-unique fleet essential airlift, then transports passengers, mail, and critical materiel from forward sites to underway forces. Although naval organic airlift satisfies most intratheater requirements, the Navy requires some common-user airlift to augment this capability.

(d) **USMC.** USMC forces require common-user airlift when deploying into a theater as part of either a maritime pre-positioning force MAGTF or as an air contingency MAGTF. During maritime pre-positioning force operations, USMC forces are airlifted to join maritime pre-positioned equipment and supplies at the arrival and assembly area. Additional fly-in echelons of personnel, equipment, and supplies are airlifted into the theater to complete and sustain the force. The air contingency MAGTF requires intertheater airlift of both personnel and equipment. Depending on the mission, operations ashore may require intertheater and intratheater common-user airlift support to sustain and/or support the force.

(e) **USAF.** Most USAF mobility aircraft self-deploy; however, unit support personnel and equipment require airlift to the destination with or before the deploying unit aircraft. Dedication of significant airlift assets to USAF units may be required early in deployment operations. USAF units normally begin air operations shortly after arrival. Therefore, airlift must be able to rapidly deploy full squadron support packages, to include combat support elements, their equipment, and both initial and sustainment supplies.

(f) **United States Coast Guard (USCG).** The USCG operates fixed-wing and rotary-wing aircraft, which are capable of providing flexible and responsive common-user airlift but is limited by statutory priorities and a lack of strategic support facilities. USCG organic airlift is normally sufficient to satisfy USCG airlift requirements. In addition, the USCG often relies on DOD airlift assistance for OCONUS deployments and CCMD-supported missions. If Congress or the President transfers the USCG from Department of Homeland Security to DOD during wartime (as a Service within the Department of the Navy, per Title 14, United States Code [USC], Section 3), designated USCG aircraft may be available as common-user airlift. Otherwise, USCG airlift may be requested from Commander, USCG Atlantic Area, or Commander, USCG Pacific Area, under Title 31, USC, Sections 1535 and 1536.

(g) **SOF.** SOF have highly trained aircrews and specially configured aircraft dedicated to conduct specialized air mobility tasks, including infiltration, exfiltration, and resupply of SOF. These aircraft are not part of the common-user system and have limited capability to perform large-scale deployment, sustainment, and redeployment operations. Due to their unique capabilities, special operations aircrew and aircraft may be requested to support other specific specialized air mobility missions, but their use must be deconflicted with higher-priority special operations requirements. 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. SOF are augmented by common-user airlift support. Additionally, selected conventional airlift forces with specially trained aircrews and modified aircraft may augment SOF airlift capability.

1. The JFSOCC obtains airlift and provides an STT to support airlift operations by following the procedures in this publication and in JP 3-05, *Special Operations.* Intratheater airlift forces provide valuable support for SOF. For routine logistics requirements, SOF request intratheater airlift support through their respective supporting Service component. When SOF units require airlift to perform special operations-specific missions that require specially trained and equipped airlift forces, they transmit their request through their SOF command channels. 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, entered into isolation for tactical rehearsals.

2. 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.

(h) **Contract Airlift.** National airlift policy dictates that commanders shift airlift workload to commercial carriers if surge and training requirements have been met and threat conditions allow. Gaining rapid access to commercial carriers through a flexible and responsive contractual mechanism is a significant force multiplier. Commercial carriers can provide tremendous capability using existing commercial networks on short notice allowing JFCs the flexibility to use organic aircraft for higher priority missions or for special missions unsuited for commercial airlift.

(i) **Other Non-DOD Agencies.** USG departments and agencies, such as DOS and the Drug Enforcement Administration, use DOD airlift for activities such as NEO, counterdrug operations, foreign humanitarian assistance, and defense support of civil authorities. Non-DOD agencies may use common-user airlift, providing the DOD mission is not impaired. The movement must be of an emergency, lifesaving nature, specifically authorized by statute, in direct support of the DOD mission, or requested by the head of an agency of the government under the Economy Act (Title 31, USC, Sections 1535 and 1536) and/or the Robert T. Stafford Disaster Relief and Emergency Assistance Act (or Stafford Act) (Title 42, USC, Chapter 68, Section 5121). The Economy Act permits one federal agency to request the support of another, provided that the requested services cannot be obtained more cheaply or conveniently by contract. Under this act, a lead federal agency may request the support of the DOD without a presidential declaration of an emergency as required by the Stafford Act. The Stafford Act sets the policy of the USG to provide an orderly and continuing means of supplemental assistance to state and local governments in their responsibilities to alleviate the suffering and damage that result from major disasters or emergencies. It is the primary legal authority for federal participation in domestic disaster relief. Under the Stafford Act, the President may direct federal agencies, including DOD, to support disaster relief. DOD may be directed to provide assistance in one of three different scenarios: a presidential declaration of a major disaster, a presidential order to perform emergency work for the preservation of life and property, or a presidential declaration of emergency. To obtain common-user airlift, non-DOD agencies submit requests IAW Defense Transportation Regulation (DTR) 4500.9-R, *The Defense Transportation Regulations.*

4. Airland Delivery

a. **Airland is the preferred method of aerial delivery.** Planners should view airland delivery as the primary means for most air movements. 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 has entered a hover.

b. Airland delivery is usually the most efficient delivery method for moving equipment, personnel, and supplies for the following reasons:

(1) It allows a greater degree of unit integrity and the 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.

(5) It permits the maximum utilization of ACL by eliminating the volume and weight penalties of preparing loads for airdrop deliveries.

(6) It maximizes the opportunity to backhaul or evacuate cargo, patients, and personnel.

c. The principal disadvantages of airland operations are:

(1) It requires airfields or LZs that are moderately level or unobstructed and adequate for the anticipated operation.

(2) It may increase mission intervals and, thus, the total time for delivery of a given force, depending on airfield size, offload equipment availability, and airfield support capability.

(3) It normally requires airlift mission support such as ground-handling and transportation assets.

(4) It prolongs exposure of aircraft, crews, and ground support personnel to air or ground attacks.

(5) It reduces available airlift flexibility when using uncontaminated aircraft to land in a contaminated environment. Once an aircraft is contaminated, it will not be allowed to be operated in an uncontaminated environment.

(6) It may require additional sorties to deliver MHE.

d. When planning airland operations, consideration should be given, but not limited, to the following:

(1) The duration and location of the operation.

(2) The type and amount of cargo or number of passengers for delivery.

(3) The number and type airlift assets available and aircrews and ground crews available to fly and service them.

(4) The desired phasing of forces into the operating area.

(5) The expected threats throughout the mission.

(6) Force protection requirements.

(7) APOE/en route/APOD airfield capabilities, to include:

(a) Working MOG reflecting the number of aircraft that can cycle through an airfield in a given time based on services available.

(b) Available MHE.

(c) POL storage and dispensing capability.

(d) Available transportation assets to transport cargo and personnel.

(e) Pavement strength and obstacle clearance requirements.

(f) Aircraft servicing, maintenance, and damage repair capabilities.

(g) Crew rest facilities.

(8) Airspace considerations, to include the ability to control airspace in the absence of ATC facilities.

For further information on TTP for terminal airfield ATC, see Army Techniques Publication 3-52.3 (FM 3-52.3)/MCRP 3-25A/NTTP 3-56.3/AFTTP 3-2.23, Multi-Service Tactics, Techniques, and Procedures for Joint Air Traffic Control.

(9) The weather conditions.

(10) Night operation/night vision device requirements.

(11) Aircrew survival measures, including escape and evasion points, routes, corridors, and safe haven locations.

e. Airland operations generally fall within the following four concepts:

(1) **Hub and Spoke Operations.** Intertheater airland operations normally offload personnel and materiel at a main operating location within the theater. Subsequently, intratheater airlift moves designated personnel and equipment to forward operating locations, an employment concept referred to as a hub and spoke operation (see Figure V-1). Hub and spoke operations allow planners to maximize the capabilities of each aircraft type and they provide a safe location for transloading operations by avoiding flights into high-threat or contaminated locations. This is particularly important for nonmilitary aircraft which typically lack defensive countermeasure equipment.

(a) Hub and spoke operations permit flexible dispersion (to include last-minute changes in requirements) between the various FOBs.

(b) Units should consider the required MHE and transportation assets needed to transfer personnel, equipment, and cargo from one aircraft to another.

(2) **Direct Delivery.** Direct delivery involves airlifting personnel and materiel from ports of embarkation to forward operating locations in the theater. By bypassing intermediate operating bases and the transshipment of payloads typically associated

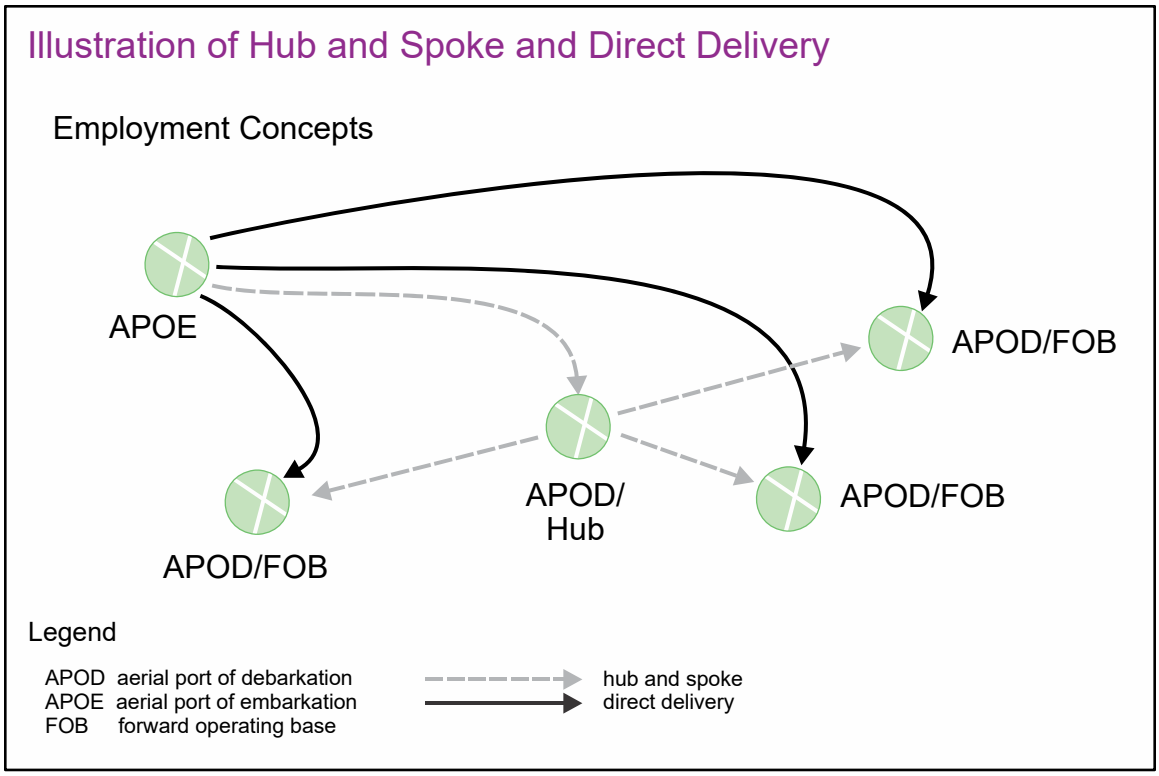


Figure V-1. Illustration of Hub and Spoke and Direct Delivery

with hub and spoke operations (see Figure V-1), direct delivery typically shortens in-transit time and reduces congestion at main operating bases. Direct delivery can use airland or airdrop delivery methods. For example, personnel can be airlifted from CONUS and delivered directly to the theater by airlanding or airdropping them at a forward operating location.

(a) Direct delivery is often the quickest method for delivery of TS cargo. While these operations are more complex, they can significantly reduce the GAMSS footprint by eliminating transshipping operations, reducing the number of diplomatic clearances required and, in most cases, decreasing closure time. Direct delivery is not, however, the best solution for large movements or when there are multiple FOBs that must be serviced.

(b) Most direct delivery operations will require an air bridge and associated AR support. AR support will increase the number of aircraft required to accomplish the mission.

(3) **Stage Operations.** Aircraft ranges, crew requirements, and mission limitations may dictate the need for intermediate stops. This practice is also called "lily pad operations" (see Figure V-2). The final leg into the AOR or JOA may terminate at the final destination or at a theater hub. These operations require en route support locations and may place a heavier burden on the GAMSS.

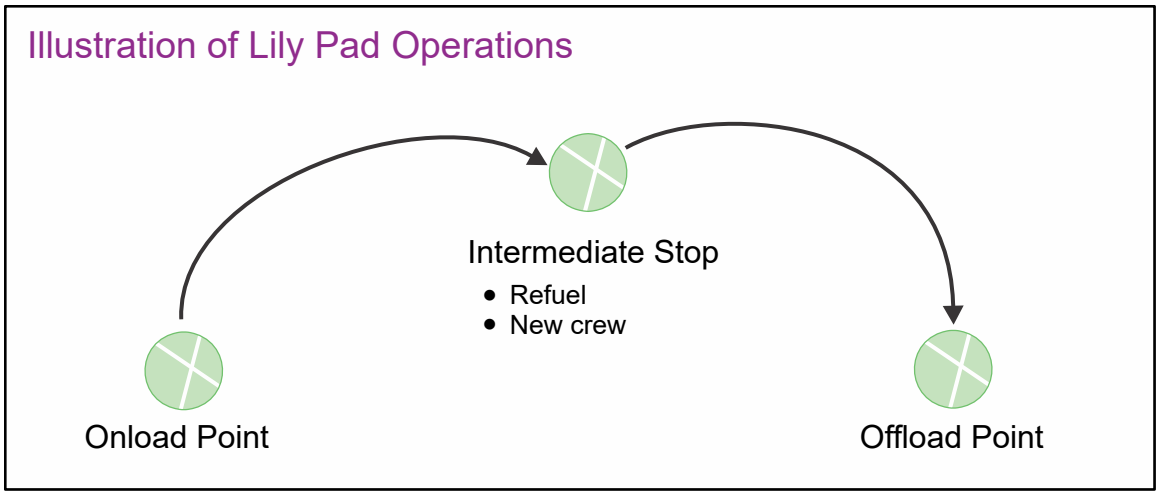


Figure V-2. Illustration of Lily Pad Operations

(4) **Air Bridge.** Air bridge operations refer to flights between CONUS and OCONUS terminals where the receiver aircraft's range is augmented by an in-flight refueling on designated AR tracks (see Figure V-3).

f. **Planners should also consider the following for airland operations:**

(1) Airfield and aerial port capabilities may result in mission delays and backlog cargo at intermediate or theater offload terminals.

(2) AR and airlift forces have finite maintenance and regeneration cycles, which may quickly be exceeded.

(3) GAMSS forces have limited organic resources and can only operate "barebase" terminals for limited time periods.

g. For movement planning purposes, airlift aircraft load planning considerations are either administrative-loading or combat-loading.

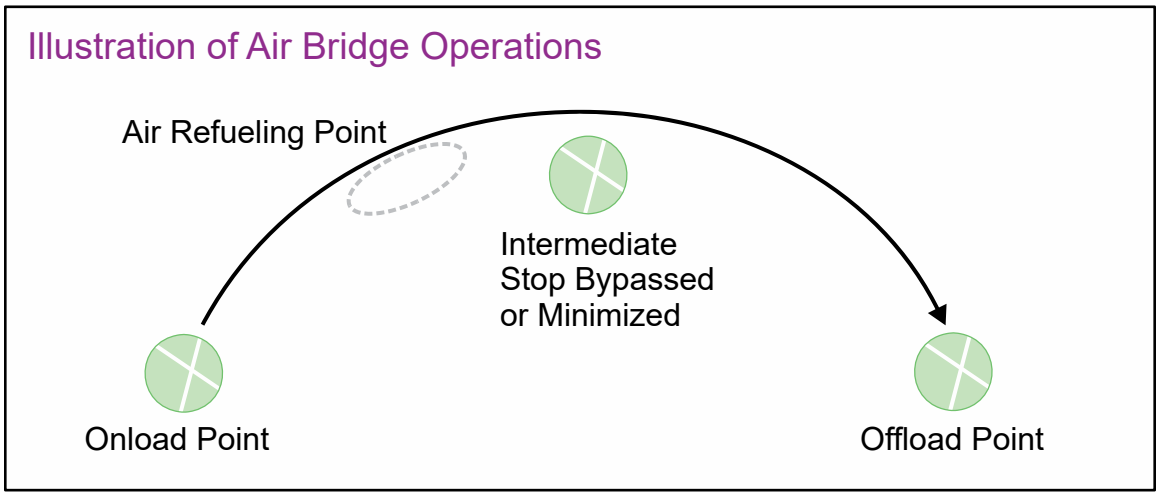


Figure V-3. Illustration of Air Bridge Operations

(1) Administrative-loading gives primary consideration to using airlift assets most efficiently. Administrative-loading maximizes use of volumes and weight capacities of airlift aircraft and their ACL without regard to ground force tactical considerations. Routine air movement is usually unopposed and uses secure airfields or well-established LZs; the majority of these missions involve the administrative loading of troops and equipment.

(2) Combat-loading arranges personnel and materiel to arrive at their intended destination in an order and condition so they are ready for immediate use. Combat-loading maximizes the combat readiness of the organizations and equipment being moved and stresses effectiveness. Airlift forces can move combat-loaded units to maximize their readiness for immediate combat operations. Given the assumption of immediate combat, user requirements should dictate scheduling and load planning.

h. **LZ Considerations:**

(1) The JFC determines the most suitable LZ locations. The selected sites must meet aircraft operational requirements, ground component requirements, and construction considerations.

(a) If an airfield is to be constructed, the supported component engineer, the JFC-designated representative, and the USAF staff engineer must agree on its specific site. The supported component engineer controls the selected site until the designated airlift representative accepts use of the LZ.

(b) 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. The supported component construction engineer and the designated airlift representative should jointly agree to such use.

(c) When established construction requirements have been met and the designated airlift representative accepts the LZ, control of the LZ passes to the airlift mission commander. The JFC staff assigns an appropriate engineer 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 engineering forces, expected LZ use, and weather.

(2) 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; suitable airfield capabilities; a straight, unobstructed, and secure approach for aircraft; and close proximity to ground objectives. Depending upon mission requirements, some LZs may be developed into more sophisticated facilities.

For additional information, see JP 3-34, Joint Engineer Operations.

(3) 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.

(4) Suitability of 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 must also be considered.

(5) 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. HN agencies may be used to identify emergency or contingency runways.

5. Airdrop

In the various airdrop methods, airlifted personnel and materiel are deployed from aircraft still in flight. Airdrop of forces, equipment, and/or supplies support the joint functions movement and maneuver, and sustainment.

a. Airdrop is often militarily advantageous.

(1) It permits sustainment deliveries to units operating away from airfields and LZs.

(2) It permits the delivery of combat forces and materiel, concentrated and in mass, in minimum space and time (often with the element of surprise).

(3) It may allow airlift aircraft to deploy personnel and materiel in conditions of poor visibility that would otherwise preclude airland operations.

(4) Medium-/high-altitude airdrop methods enable aircraft to remain above some low-altitude threats.

(5) It permits critical cargo delivery by an uncontaminated aircraft into a contaminated LZ or airfield.

(6) It may require SEAD escort operations, which will require reallocation of CAF assets.

b. In relation to airland delivery, airdrop delivery has several disadvantages.

(1) It carries an increased risk of injury to personnel or damage to cargo.

(2) It requires special training for the riggers, transported personnel, and the aircrews.

(3) It can limit ACL utilization substantially because of the special rigging required for airdropped materiel.

(4) It requires more mission planning time due to the complexity of airdrop operations.

(5) If employed by a large formation, it represents an operational-level risk. Detection and successful attack by the adversary could result in the loss of two critical assets: the airlift force and the unit and/or materiel being carried. Accordingly, the decision to use the airdrop method is predicated on determining if a user's requirements justify the risk to, and expenditure of, scarce and costly airdrop resources.

(6) It is less precise than with airland delivery and carries greater potential for unplanned dispersion.

c. **Responsibilities.** The JFC makes the decision to continue, cancel, or postpone airdrop operations based on the recommendations of the ground and air CCs. 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:

(1) Flight routing to/from the objective area to include re-attack options.

(2) DZ size and geographic relationship to the initial objective.

(3) Terrain conditions on the DZ that could cause an unacceptable number of injuries, excessive equipment damage or loss, or other deployment delays.

(4) Routes to the DZ, terrain obstructions, ease of zone identification, and adversary defenses.

(5) Earliest possible collaboration on intelligence matters, to include requirements for intelligence data, information, and geospatial products.

(6) Identification of MC cargo and a "go or no-go" decision point.

d. 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, surrounding terrain features, tactical scheme of maneuver, enemy air defenses, and en route and objective area weather.

e. **C2.** Clear C2 authorities are essential. The airdrop system should be designed to be responsive in supporting requirements. Airdrop resupply is a joint action between the USAF component and the component being supported. Supported components are 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 USAF personnel.

(1) Units requesting airdrop resupply have responsibilities to accomplish both before and after submission of airdrop requests. Before submitting requests, units should determine:

(a) Supplies and equipment needed,

(b) Location of DZ, and

(c) Time and date airdrop is desired.

(2) After airdrop requests are submitted, units:

(a) Prepare and secure the DZ.

(b) Control the DZ in the absence of a USAF STT. DZST personnel may operate DZs under visual meteorological conditions and instrument meteorological conditions (peacetime training based upon equipment availability) for a single aircraft and formations up to and including three aircraft).

(c) Recover airdropped supplies and equipment.

(d) Recover, retrograde, or destroy airdrop equipment.

f. **Airdrop Methods.** Airdrop is an alternate to airland for delivering personnel, equipment, and supplies. The type of airdrop (low or medium-high altitude, low velocity drop, high velocity drop, free drop, single aircraft, or multi-aircraft) depends on the threat, the required payload, the accuracy required, and whether mass is required on the DZ. Units requesting airdrop should request a capability. The supporting command should task the appropriate asset and tacticians should determine the appropriate method of airdrop.

(1) **Personnel Airdrop.** Personnel airdrops use static line or free fall procedures. In general, static line airdrops occur from fixed-wing/rotary-wing aircraft at altitudes below 1,500 feet above ground level (AGL) and are often used to minimize paratroopers' exposure to ground threats while under the canopy. Conversely, free all airdrops normally occur above 5000 feet AGL. Specialized free fall procedures (high-altitude low-opening/high-altitude high-opening) may be used to insert personnel as part of a clandestine operation.

For additional information, see applicable Service manuals and directives (i.e., FM 3-21.220, Static Line Parachuting Techniques and Training, *and Army Techniques Publication 3-18.11,* Special Forces Military Free-Fall Operations).

(2) **Heavy-Equipment Airdrop.** Heavy equipment loads consist of vehicles, equipment, or supplies rigged for airdrop on Type V platforms which are extracted singularly or sequentially by extraction parachutes.

(3) **CDS Airdrop.** A CDS airdrop is a gravity assisted airdrop utilizing A-22 containers rigged to different parachutes. There are two basic rigging varieties for CDS:

CDS (using low rate of fall chutes) and high-velocity container delivery system (HVCDS) in which the loads are cushioned with extra energy absorbing material and contain supplies that can withstand high-velocity impact. A subset of the HVCDS is the low-cost aerial delivery system (LCADS) which uses one-time-use, low-cost parachutes to deploy materiel.

(a) **Extracted Container Delivery System (XCDS).** XCDS airdrop deploys standard CDS bundles from the aircraft ramp and door at very-low altitudes via an extraction chute. XCDS provides a circular error (CE) within 100 meters while enabling a higher-density/smaller-dispersal footprint on the DZ.

(b) **Low-Cost, Low-Altitude.** Low-cost, low-altitude airdrop is an aerial delivery system consisting of low-weight airdrop bundles deployed from the aircraft ramp and door at very-low altitudes, enabling CE accuracy within 100 meters. This airdrop is appropriate for employment within or near a FOB or close to troops.

(4) **Improved Container Delivery System (ICDS) Airdrop.** An ICDS airdrop uses standard A-22 containers (up to 10,000 pounds in weight) rigged with various types of parachutes. The improved aspect is achieved by using joint precision airdrop system (JPADS) software to leverage 557th Weather Wing wind data and dropsonde (an expendable weather reconnaissance device designed to be dropped from an aircraft at altitude to measure atmospheric conditions as it falls to the surface) GPS telemetry data to calculate a more accurate ballistic wind and a more refined release point. The resultant effect is potential increased drop accuracy from low- and high-altitude airdrops (chute-type dependent) operations, in day/night/instrument meteorological conditions/visual meteorological conditions. Similar to conventional CDS, ICDS may be rigged as CDS or HVCDS, or LCADS. LCADS offers the accuracy and threat mitigation benefits of ICDS, while also mitigating the equipment retrograde requirement through the use of one-time-use chutes.

(5) **JPADS.** JPADS is a family of GPS-guided, self-maneuvering systems. The overall basic system consists of a common mission planner, an airborne guidance unit, and multiple steerable parachute/parafoil systems. Certain systems require dropsonde employment. Flight profiles can vary significantly with system type utilized. Airspace deconfliction is a critical JPADS employment operations planning factor. While JPADS is not a universal airdrop solution, it is the preferred method for high-altitude drops over difficult terrain where limiting the exposure of ground troops to enemy fire and minimizing risk to aircraft and aircrews are at a premium.

(6) **Free Fall Airdrop.** Free fall airdrop involves dropping small items such as packaged meals or unbreakable objects like hay bales without the use of a parachute.

(a) **Leaflet Airdrop.** Leaflets are used in support of military information support operations. The required leaflet dispersion pattern is based on leaflet size, paper weight utilized, target/coverage area size, and wind speed. These factors impact drop altitude and possible run-in headings. An accurate weather forecast is the single most important requirement.



Container delivery system bundles departing a C-17 during an airdrop mission.

(b) **Tri-wall Aerial Distribution System Airdrop.** Tri-wall Aerial Distribution System is used to airdrop containers of humanitarian daily rations during humanitarian airdrop operations. It uses standard CDS procedures with boxes rigged to destruct at the end of a static line as they exit the aircraft, causing their contents to be dispersed into the air. Like leaflet drops, target/coverage area size is a factor when determining drop altitude.

g. **DZ Considerations.** DZ size and selection are the shared responsibility of the supporting and supported JFCs and depend on the load being dropped, method of delivery, dispersal pattern, and the level of risk the JFC is willing to accept. A physical survey, accomplished by a qualified surveyor, and a safety-of-flight review are required before a DZ can be approved for use. The supported force is responsible for DZ establishment, operation, safety, and elimination or acceptance of ground hazards associated with the DZ. The airlift mission commander is responsible for the safety-of-flight review.

(1) **DZ Types.** There are several different types of DZs that can be tailored to specific operations and locations.

(a) **Rectangular.** DZs are normally rectangular due to the longer length requirements. These DZs have one axis of flight that permit run-ins from opposite directions.

(b) **Area.** An area DZ, illustrated in Figure V-4, 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.

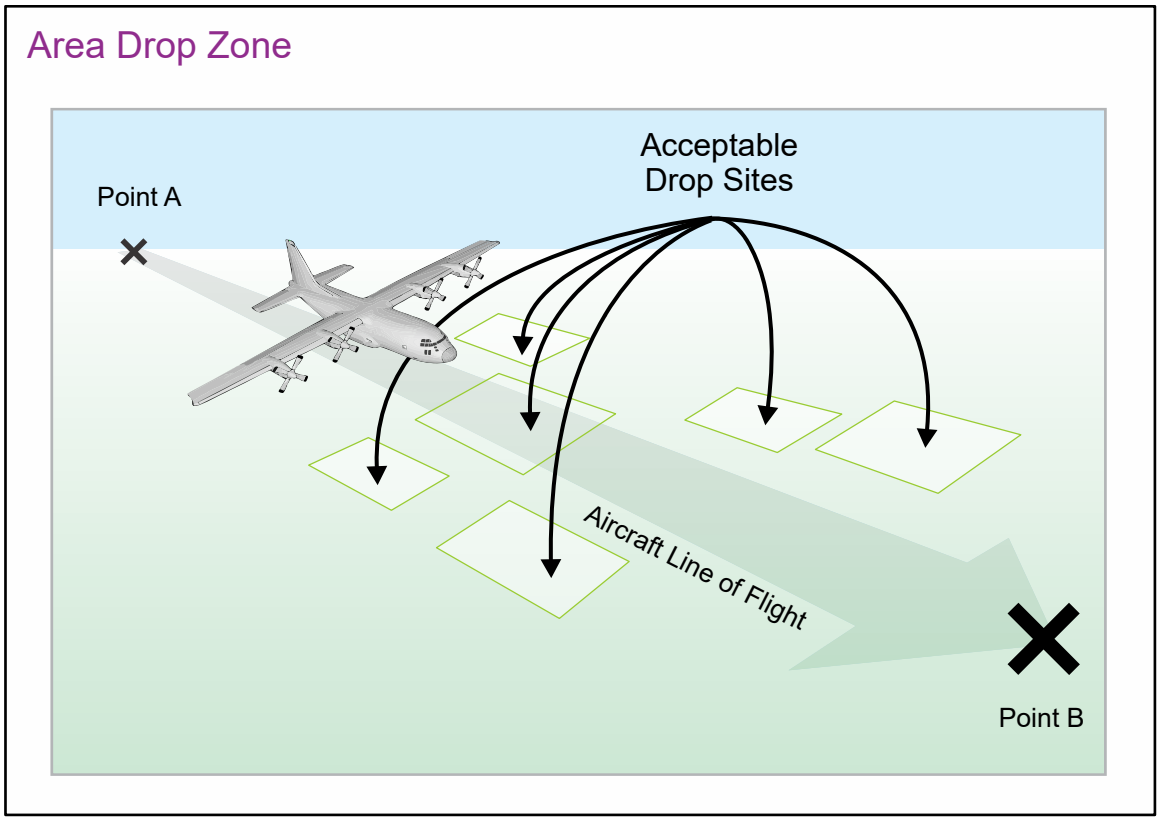


Figure V-4. Area Drop Zone

(c) **Circular.** A circular DZ, shown in Figure V-5, has multiple run-in headings and is inherently random. Mission requirements and usable terrain govern its size. The radius of a circular DZ corresponds to the minimum required distance from the point of impact 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 and JPADS DZs are normally circular in shape.

(2) **Airdrop Considerations.** A wide variety of factors determine the conduct of airdrop operations.

(a) **DZ Wind.** The JFC, based on recommendations by the ground and air CCs, may accept the high risk, cancel, or postpone the operation because of excessive wind velocity on the DZ.

(b) **Drop Altitudes.** Minimum altitudes for airdrop operations are based on the 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. However, if the threat situation permits, aircraft performing normal low-altitude, low-velocity drop operations should drop above the minimum altitude to increase load survivability.

(c) **DZ Size and Selection.** The JFC determines the general area for the airborne operation. Factors influencing DZ selection are:

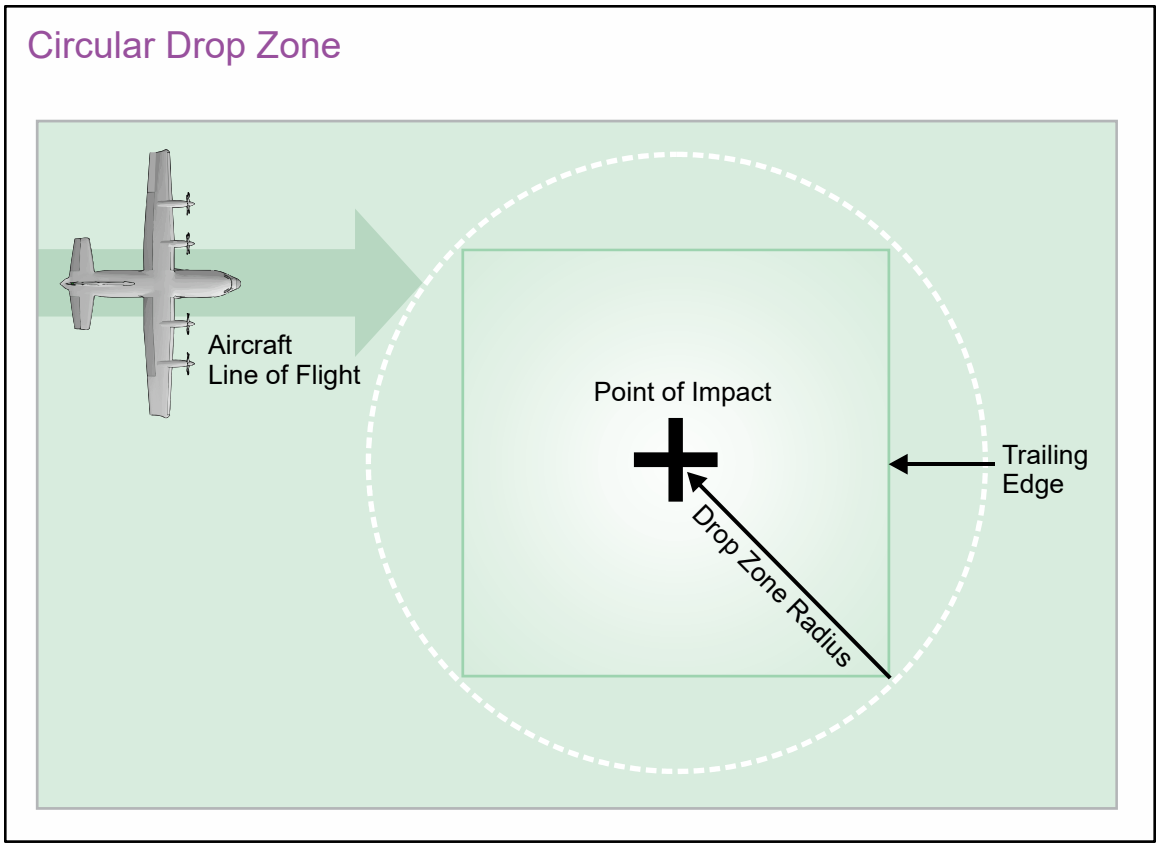


Figure V-5. Circular Drop Zone

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.

6. Planning Considerations for Airborne Assaults and Follow-on Airland Operations

a. **Planning airlift operations is a complicated process involving a few basic principles and numerous interdependent considerations. Service components must facilitate their airlift movement process. This responsibility includes performing and 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.

For additional information on airborne assaults and follow-on land operations, see JP 3-18, Joint Forcible Entry Operations.

b. The purpose of these actions is to move component resources expeditiously, with minimum expenditure of resources and minimum exposure to hostile actions. **Responsibility for controlling movements does not equate to command authority over airlift forces.** Studies, concepts, and OPLANs for employment of forces are prepared to cover possible missions and locations. Detailed planning for specific operations is performed by the participating component commands and subordinate commands; to enhance efficiency, all participants should make maximum use of existing plans.

c. **Consider these principles when planning for airlift movements:**

(1) Minimize movement congestion and vulnerability by reducing the time units and materiel spend en masse at forward terminals and synchronize the positioning of units and material with airlift capability.

(2) Maximize the productivity and survivability of airlift aircraft by minimizing aircraft ground times at forward locations.

(3) Minimize sortie requirements by repackaging all materiel for air shipment, ensuring combat personnel travel with their maximum authorized individual loads of rations, ammunition, or other personal protective equipment and splitting units into air-essential and surface movement echelons (whenever possible).

(4) Ensure personnel are adequately fed, rested, and protected at en route stops.

(5) Deploy personnel and communications equipment necessary to track and report on all air movements.

d. Different missions will require the use of different airlift assets. The Services possess a variety of fixed-wing and rotary-wing platforms capable of performing the air mobility role.

(1) The main advantage of fixed-wing aircraft over ground surface transportation modes is that they combine speed (250 to 500 knots, depending on aircraft type) and the ability to carry substantial to very large cargo capacities (7 to over 100 tons, also depending on aircraft type). This provides the capability to quickly move large amounts of personnel and materiel over greater distances. Airlift can also be employed to reduce the need for ground convoy operations that are vulnerable to enemy attack. The combination of 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 main 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-130, are usually suited to a sustained intratheater airlift role, and the larger transports are best suited for the intertheater airlift role.

(2) In a CBRN-contaminated environment, plan to avoid contaminating air mobility aircraft, thus preserving limited assets for future use. Avoid airland operations into contaminated airfields by airdropping critical supplies and equipment or shifting deliveries to uncontaminated airfields (consider use of austere LZs such as highway landing strips and dirt and/or gravel LZ construction).

(3) The Services and US Special Operations Command also operate rotary-wing and tiltrotor aircraft, such as the UH-1, H-60, V-22, CV-22, CH-46, CH-47, and CH-53, which possess intrinsic intratheater airlift capabilities. Rotary-wing and tiltrotor aircraft can be useful for intratheater purposes for the following reasons:

(a) Their ability to operate at smaller, undeveloped LZs increases their flexibility and often reduces ground-transit times for their loads.

(b) Their ability to transport personnel and materiel to and from forward-deployed ships increases expeditionary flexibility.

(c) Their terrain-hugging flight capabilities enhance their survivability in certain threat situations.

(d) Their ability to sling-load some types of materiel allows them to pick up and deliver loads with minimal ground-handling delays.

(4) However, in relation to fixed-wing aircraft, the inherent aerodynamic inefficiencies of rotary-wing aircraft sharply restrict payload and range capabilities. In addition, their mechanical characteristics give them a high ratio of support-man-hours to flight-hours. Consequently, rotary-winged assets:

(a) Usually are not suited to sustained airlift operations beyond about 50-100 nautical miles from a refueling point.

(b) Usually require more maintenance hours per hour of flight time.

(c) Usually are based at LZs not well suited to large-scale, sustained, fixed-wing airlift operations.

(5) For these reasons, airlift-capable rotary-wing and tiltrotor 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 intratheater airlift effort, the JFC should consider their vital importance to their assigned organizations, as well as their utility to specific airlift missions. Intratheater airlift requirements that might best be filled by rotary-wing aircraft could include large

requirement, short-distance operations, such as resupplying ships at sea and unloading ships at undeveloped water terminals, or routine small-payload operations to sites not collocated with LZs, such as daily courier flights to deployed air defense units.

CHAPTER VI
AIR REFUELING

"I had to fly nine sorties on the day the St. Mihiel offensive started… We all wished we could refuel somehow without having to return to our bases just when the action got interesting."

Lieutenant John Richter, US Army Air Service Pilot in World War I

1. General

a. AR allows air assets to rapidly reach any trouble spot around the world with less dependence on forward staging bases. Furthermore, AR significantly expands the force options available to a commander by increasing the range, payload, loiter time, and flexibility of other aircraft.

b. Because AR increases the range of other aircraft, many types of aircraft may be based at locations well outside the range of an adversary threat. AR allows some aircraft to participate in contingency operations without having to forward-deploy. Operations based from CONUS or established main operating bases reduce the theater logistics requirements, thereby simplifying sustainment efforts. Positioning forces outside the threat's reach permits a greater portion of combat assets to concentrate on offensive rather than defensive action. As a result of the reduced need to forward-deploy forces, AR reduces force protection requirements as well.

c. AR permits aircraft to operate beyond their unrefueled ranges, carry larger takeoff payloads, and extends operational endurance. By maximizing their payload, the combat potential of receiver aircraft is significantly increased.

d. Although other Services and nations maintain some organic AR capability, the USAF possesses the overwhelming preponderance of common-user AR assets. With boom and drogue capability, these assets are capable of refueling most USAF, USN, and USMC aircraft and can accommodate most foreign aircraft.

e. Force extension is the AR of one tanker by another and is the most efficient means to provide deployment support, given a limited number of tanker aircraft. This capability can be used whenever the fuel requirements of the escorting tanker and its receivers exceed the tanker's takeoff fuel capacity. Since takeoff fuel is limited by the amount of payload carried, dual-role tankers may require force extension. Not all tankers are refuelable. All KC-10s and a small number of KC-135s are equipped as receivers and therefore can be force extended. Whenever possible, force extension missions should be planned along air bridge routes to use tankers supporting air bridge movements.

f. USAF tanker aircraft may perform a bulk cargo role to augment core airlift assets. Under the dual-role concept, AR aircraft can transport a combination of passengers and cargo while performing AR. In some circumstances, it may be more efficient to employ AR aircraft strictly in an airlift role. Deploying AR units may be tasked to use their organic

capacity to transport unit personnel and support equipment or passengers and cargo from other units. AR aircraft may also be used to support airlift requirements such as routine channel operations or SAAMs.

g. **Components of the AR Force. The majority of the USAF's AR assets are assigned to USAF Reserve and ANG units.**

(1) **Active Duty Forces.** Similar to airlift forces, CDRUSTRANSCOM has COCOM of most CONUS-based active duty AR forces and delegates OPCON to AMC/CC who further delegates OPCON to 18 AF/CC. Similarly, theater-assigned AR forces come under COCOM of their GCC (e.g., Commander, USEUCOM, or Commander, USINDOPACOM) and under OPCON of the theater COMAFFOR (e.g., USAFs in Europe or Pacific numbered air forces). These forces perform core and specialized AR missions and are readily available for tasking and deployment. In addition to the USAF, the USN and USMC possess some organic AR resources, which may also augment joint AR operations.

(2) **Air Force Reserve and ANG Forces.** During crises, volunteers or activated AFRC and/or ANG units augment the active duty AR force, providing substantial increases in AR capacity. AFRC and ANG personnel train to the same standards as the active duty AR force. Peacetime access to AFRC and ANG forces is provided through a system of volunteerism or mobilization authorization for non-wartime events such as defense support of civil authorities and preplanned missions. Major contingencies, however, normally require activation of AFRC and/or ANG units.

2. Air Refueling Operations

AR's contribution to air operations is based on the force enabling and force multiplying effects of increased range, payload, and endurance provided to refueled aircraft. AR forces conduct both intertheater and intratheater AR operations.

a. **Intertheater AR.** Intertheater AR supports the long-range movement of combat and combat support aircraft between theaters. Intertheater AR operations also support global strike missions and airlift assets in an air bridge. AR enables deploying aircraft to fly nonstop to their destination, reducing closure time.

b. **Intratheater AR.** Intratheater AR supports operations within a GCC's AOR by extending the range, payload, and endurance of combat and combat support assets. Both theater-assigned and USTRANSCOM-assigned AR aircraft can perform these operations. When USTRANSCOM-assigned AR forces participate in these operations, they are typically attached to the GCC who exercises OPCON over these forces through the COMAFFOR. Although the primary purpose is to refuel CAF operating within the theater, consideration should be given to the best utilization of the tanker aircraft fleet to meet the President's and SecDef's objectives.

c. **Anchor Areas and AR Tracks.** While AR is normally conducted in friendly airspace, missions may require operations over hostile territory and in contested airspace. Anchor areas and tracks may place tankers in an extremely vulnerable position and should



Air refueling missions in United States Central Command's area of responsibility refuel almost 74,000 aircraft per year.

be limited to friendly airspace when possible. AR missions over hostile territory should be conducted only after careful risk considerations and when at least regional air superiority is achieved.

(1) In anchor areas, the tanker flies a racetrack pattern within defined airspace while waiting for receiver aircraft to arrive. Once joined with the receiver, the tanker then flies in an expanded racetrack pattern while refueling the receiver. **Anchor AR is normally used for intratheater operations where airspace is confined or where receivers operate in a central location.** Anchor areas are best suited for small, highly maneuverable aircraft, especially in marginal weather conditions.

(2) An AR track is a published track or precoordinated series of navigation points, which can be located anywhere throughout the world. To maximize effectiveness, AR tracks will normally be placed along the receiver's route of flight. However, AR track location(s) must be balanced with tanker availability and basing to develop an integrated AR plan making the best use of limited receiver and tanker assets overall. AR along an AR track is the preferred method for intertheater operations.

(3) The tanker RV can be accomplished in multiple ways.

For more information about RV procedures, see North Atlantic Treaty Organization (NATO) Standard Allied Tactical Publication (ATP)-3.3.4.2, Air-to-Air Refueling.

d. **Tanker Formation Refueling.** Many missions require tankers to refuel their receivers while in a multiple-aircraft formation. Mission requirements may dictate several different types of tankers (boom and/or drogue equipped) and multiple receiver types (from a variety of nations) in the same formation. Formation refueling is one of the most

demanding operations due to the number of aircraft in a confined block of airspace and because receiver aircraft may be constantly joining and leaving the formation. It also brings in additional planning factors and requires a significant amount of coordination to ensure smooth, safe execution of the mission.

e. **Joint and Multinational Operations.** Joint and multinational operations require teamwork, unity of effort, and principles that are fundamental to AR. When working with other Services and nations, there is a potential for differences in capabilities, procedures, and terminology, which may cause misunderstandings and confusion. Such operations therefore require a standard set of tactics, terminology, and procedures.

(1) For example, NATO Standard ATP-3.3.4.2, *Air-to-Air Refueling,* standardizes operating procedures and enhances interoperability among NATO member nations possessing AR assets. While the detailed procedures will depend on aircraft type, mode of employment, and national requirements, many allies should be able to achieve sufficient commonality so that a combined set of procedures can be developed. Commanders of a multinational force should agree as soon as possible on a common set of doctrine, tactics, and procedures for particular operations.

(2) In addition, airspace may be a primary limitation to AR operations. Standardizing multinational cell formation procedures allows a variety of AR assets to operate in compressed airspace. This is particularly important when large numbers of tankers may be refueling multiple receivers or formations of receivers. To generate the maximum combat power in multinational operations, all military capabilities must be integrated to the fullest extent. Multinational exercises are a key component to common doctrine and interoperability. These exercises should be used as often as feasible to foster a common understanding. The doctrine and procedures established by the multinational commander will provide additional flexibility, deployability, and sustainability in multinational air operations.

3. Air Refueling Missions

The Basic Missions of AR. AR is a critical force multiplier across the full range of global and theater employment scenarios. Tankers directly enhance the operational flexibility of US and allied/coalition strike, support, and surveillance aircraft. AR missions represent the broad, fundamental, and continuing activities of the AR system. In the same manner, **the nearly unlimited flight endurance provided by tanker assets is an indispensable component of the US strategic airborne command post concept.** It provides the President and SecDef the ability to continue to direct military action from an airborne platform—regardless of the situation.

a. **Global Strike Support.** AR assets are a critical enabler for global strike operations (conventional or nuclear). For example, AR significantly increases the range and endurance of bomber aircraft, directly enhancing their flexibility to strike at distant targets and maximizing their operational utility for warfighter mission requirements. Tanker availability can also be critical to overall mission success through support of a wide variety of support package aircraft refueling requirements. In addition, AR can mitigate

operational risk for strike or support aircraft by decreasing reliance on OCONUS/forward basing locations. AR is key to US ability to rapidly strike targets in distant locations and recover to safe areas. The ability to perform long-range strike missions from CONUS is particularly crucial.

b. **Air Bridge Support.** An air bridge creates an ALOC linking CONUS and a theater or any two theaters. AR makes possible accelerated air bridge operations since en route refueling stops for receivers are reduced or eliminated. It reduces reliance on forward staging bases, minimizes potential en route maintenance delays, and enables airlift assets to maximize their payloads. This significantly increases the efficiency of airlift operations by making possible the direct delivery of personnel and materiel.

c. **Aircraft Deployment Support.** AR assets can extend the range of deploying combat and combat support aircraft, allowing them to fly nonstop to an AOR or JOA. This capability increases the deterrent effect of CONUS-based forces and allows a rapid response to regional crises. The capability of air assets to fly nonstop to a theater may eliminate the need to obtain landing or overflight rights from foreign countries that may want to remain neutral in a given conflict. Successful execution of the USAF's aerospace expeditionary force concept, for example, is heavily dependent on the capabilities rendered through deployment support. Coronets normally have long lead times for planning, tasking, and execution. Planners should use this time to maximize the overall efficiency of the movement for both receivers and tankers, while remembering their purpose is safe and effective movement of the receivers.

d. **Theater Support to CAF.** Intratheater AR enables fighter aircraft to increase their range, endurance, and flexibility. During a combat operation, the highest priority for intratheater AR forces is normally supporting combat and combat support aircraft executing air operations. This is especially true during the initial phases of a conflict. Theater-based AR assets bolster the security of combat and combat support air assets by allowing them to be based beyond the range of adversary threats. Extending endurance reduces the number of sorties required, decreases ground support requirements at forward locations, and may reduce the number of aircraft deployed to an AOR.

(1) AR allows combat aircraft to carry a larger payload on initial takeoff by decreasing the amount of fuel carried in its tanks. Fuel necessary for mission range requirements is onloaded after takeoff on either pre-strike or post-strike refuelings. The ability to increase an aircraft's weapons load multiplies the combat force and combat efficiency of that aircraft.

(2) OEF, OIF, and Operation ALLIED FORCE have highlighted the importance of airspace required for AR, especially during combat support missions. A lack of AR airspace can limit the amount of combat and combat support sorties the JFACC is able to schedule and execute. Airspace planning for these operations includes sufficient allowances for ingress/egress of both receivers and tankers and allow deconflicting aircraft operating at significantly different speeds. Experience in OEF and OIF shows that without sufficient airspace deconfliction, the greatest threat to friendly forces can be from mid-air collisions with our own forces.

(3) Tankers allocated for theater support may be called upon to provide AR support to air bridge operations. In conjunction with the JAOC director, the DIRMOBFOR must coordinate with the COMAFFOR on the capabilities of, and requirements for, tankers assigned or attached to the theater to determine their ability to provide air bridge support. The COMAFFOR will determine air bridge support using GCC-assigned and attached forces based on the JFC's guidance, as doing so may adversely impact the theater's operation/campaign, as well as impact logistics support. If air bridge cannot be fully supported by theater-assigned/attached forces, the DIRMOBFOR will coordinate with USTRANSCOM for air bridge support using USTRANSCOM forces.

e. **Special Operations Support.** AR enables SOF to maintain a long-range operating capability. The USAF maintains AR crews who are trained to air refuel fixed-wing, rotary-wing, and tiltrotor special operations aircraft. Successful mission completion requires special equipment, specialized crew training, and modified operational procedures.

f. **Other Associated AR Missions.** Additional taskings for AR aircraft include emergency AR, airlift, AE, and personnel recovery (PR).

(1) **Emergency AR.** Some AR aircraft may be kept on ground or airborne alert to provide short-notice support for airborne fuel emergencies. Fuel emergencies can result from missed refuelings, en route winds greater than planned, battle damage, or excessive time engaged with adversary or enemy aircraft or targets. While dedicated ground alert aircraft sometimes meet emergency AR requirements, excess fuel capacity of airborne tankers is another method of providing emergency AR capability. Putting more fuel in a tanker than is required to complete the mission, known as "tankering fuel," gives that aircraft an automatic, though limited, emergency refueling capability.

(a) **Intertheater Operations.** OPCON of intertheater AR will typically be delegated to 18 AF/CC with C2 provided by the 618 AOC (TACC). Whenever possible, intertheater missions should be planned either over, or in close proximity to, existing air bridge routes. This allows tankers positioned for air bridge support to also provide emergency AR support. When intertheater missions cannot be planned along air bridge routes and the mission is deemed important enough to provide emergency AR support, planners should use a combination of ground and airborne spare aircraft. Ground spare aircraft are maintained in various stages of readiness depending on mission requirements. Airborne spare aircraft consist of one or more tankers that accompany the AR formation but do not participate in any ARs unless required to do so. No matter which option is used, the concepts must be adequately delineated in mission directives so tankers, receivers, and participating C2 elements are thoroughly familiar with procedures to be used in a fuel emergency.

(b) **Intratheater Operations.** The dynamic environment and quick tempo of intratheater operations provide a greater need for emergency AR support. The shorter distances involved and the larger number of available assets makes providing emergency AR support much easier to accomplish. The preferred method of providing emergency support is through a combination of ground and airborne aircraft.

1. Ground alert aircraft and crews primarily provide units with the capability to meet mission requirements when fuel emergencies occur due to battle damage or excessive time engaged with adversary or enemy aircraft or targets. The best tanker aircraft for ground alert duties are those capable of quick response times, high cruise speeds, and a takeoff fuel load large enough to accommodate all offloads. Ideally, ground spare aircraft should be capable of refueling drogue and boom type refueling on the same mission. Otherwise, units must maintain separate aircraft on ground alert, configured for each type of refueling. Ground alert tankers and crews can be dedicated solely to that function.

2. Refuelers are normally based well away from tactical operations areas for safety reasons. Ground spares might not be able to reach an area in a timely manner should tasked tankers not be able to provide adequate offload or receivers miss scheduled refuelings. Reliability tankers operate in a given area with no scheduled receivers and act as flying spares. Because of the cascading effects of the loss of AR, reliability tankers should be used when assets are available. If a reliability tanker can also accept fuel, the capability is leveraged through extended endurance.

(2) **Airlift.** Refueling platforms may act as augmentation to airlift. This capability is most important during deployment operations when airlift requirements are highest and requirements for theater support refuelings are the lowest. During contingencies, commanders should continually evaluate tanker allocations to airlift missions, weighing the loss of assets from traditional tanker missions against the benefits gained by a larger, augmented airlift capacity. This evaluation must consider the objectives of the entire joint operation or campaign and not just those of the USAF component.

(a) Another key application of tanker aircraft in an airlift role occurs during tanker unit movements. Tanker units deploying to a theater or en route location will typically airlift their own support requirements under the integral tanker unit deployment concept. This allows tanker units to have key supplies and personnel on hand as soon as they arrive at their deployed location, and it relieves the air transportation system of at least a portion of their requirements.

(b) **Dual-Role Tanker.** Accomplishing airlift and AR on the same mission (dual-role operations) maximizes the full capabilities of tanker aircraft. Dual-role operations may be as simple as carrying opportune cargo or passengers on a routine intertheater AR mission, or it may be as complex as a fighter unit move. On Coronet missions, tankers carry a unit's personnel and equipment while escorting its fighters to a deployed location. Upon arrival, the tankers download their cargo and passengers who may immediately reconstitute and launch the deployed fighters. This allows arriving aircraft to be ready for follow-on missions quickly, simplifying required coordination for airlift support of deployments and reducing the number of dedicated airlift aircraft required to support an operation.

(3) **AE.** KC-135 and KC-10 tankers can be used for AE when crewed by a fully qualified and current AE crew using AE equipment tested/modified for use on the aircraft.

(4) **PR.** Tanker aircraft provide a limited capability to assist PR operations as a communications and coordination link between airborne and ground-based elements. This capability derives from the tanker's long endurance characteristics and organic communications equipment. In the case of a downed fighter, the wingman will attempt to remain on scene to ascertain the downed crewmen's status and provide protection until PR forces arrive. During this process, the tanker will normally remain at altitude, relaying information where communications connectivity is easiest, and will refuel on scene forces as required. During Operation ALLIED FORCE, KC-135s were diverted to the scene of a downed airman. Once on the scene, tankers refueled two A-10 aircraft that were providing close air support for the rescue effort, AWACS aircraft providing C2 for the operation, and combat search and rescue aircraft affecting the rescue.

Refer to JP 3-50, Personnel Recovery, *for further information on PR.*

4. Planning Air Refueling Operations

a. While many considerations for air mobility forces are the same for airlift and AR assets, there are some specific considerations unique to tanker operations. These include the following:

(1) **Boom Versus Drogue.** If planned operations will include a significant number of receivers requiring drogue-type refueling intermixed with receivers requiring boom-type refueling, planners should consider using tankers capable of both types of refueling on the same mission.

(2) **Total Offload Versus Booms in the Air.** Planners must consider whether planned operations will emphasize total offload capability for only a few receivers or a rapid refueling capability for multiple receivers. If total offload capability is more important (such as for large aircraft), fewer numbers of tankers with larger fuel loads should be planned. If the mission emphasis is on frequent, rapid refuelings to multiple receivers (such as multiple fighter strike packages), it is more effective to use a larger number of tankers maximizing the number of available "booms in the air."

b. **Daily Allocation.** At the operational level, force allocation consists of translating the JFC's air apportionment decisions into total number of AR sorties, by aircraft type, available for each operation or task. AR assets are matched against receivers in the ATO based on the JFC's air apportionment guidance but tempered by changing conditions. At this level, the most important decisions are those that place tanker aircraft types against receiver requirements, while optimizing the use of those assets.

c. AR capability can be increased without increasing the number or size of tanker aircraft by carefully matching tanker aircraft types against receiver mission requirements. This involves greater use of refuelable reliability tankers, assigning individual tankers to multiple receivers or receiver packages, and ensuring receiver AR requests accurately reflect their mission requirements. The considerations for daily allocation decisions are much the same as for contingency allocations as discussed above. When developing daily

AR allocations, planners must consider boom versus drogue requirements, emphasis on total offload versus booms in the air, and SOF requirements.

d. **Airspace and ATC.** Many countries have specific restrictions on AR operations conducted within their sovereign airspace. Planners need to be aware of potential restrictions.

e. **Altitude Reservation (ALTRV).** Most intertheater AR operations require an ALTRV to reserve AR airspace. ALTRVs must be submitted IAW rules of the International Civil Aviation Organization (ICAO) in international airspace and must be submitted IAW ICAO and HN rules when conducted over territorial airspace. Planners must ensure ALTRV approval is received prior to conducting AR operations. ALTRVs do not relieve aircrews of the requirement to obtain diplomatic clearances or to file flight plans.

f. **AR Airspace.** Most intratheater AR is conducted in airspace specifically designated for AR. For peacetime operations, AR airspace is published in flight information publications with boundaries, altitudes, and communications frequencies agreed to by the ATC authorities. During a contingency, AR airspace close to the adversary will change frequently, and its altitudes and communications frequencies will be classified to avoid predictability. Routing to and from the AR airspace will also change in response to changes in air operations and threats to friendly forces.

g. **Communications Capabilities and Emissions Control.** AR operations are highly dependent on both air-to-air and air-to-ground communications. Throughout AR operations, tankers must be able to communicate with their receivers, AWACS controllers, local ATC, and other tankers in formation and maintain at least a listening watch on designated high frequency channels. Mission requirements normally dictate that tankers maintain positive contact on most all of these frequencies simultaneously. Combat or politically sensitive missions may require both the tanker and receiver to exercise emission control (EMCON) procedures. These procedures minimize an aircraft's transmission of electronic signals (communication and navigation) to reduce the amount of information other forces can gather. Use of EMCON entails bringing two aircraft together, in the same airspace with an intentionally degraded communication and navigation capability. To be successful in refueling under EMCON conditions, standardized procedures must be developed between tanker and receiver(s). The procedures must be regularly exercised by both tanker and receiver aircrews, and they must be thoroughly briefed on the procedures to be used prior to each mission.

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APPENDIX A
POINTS OF CONTACT

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APPENDIX B
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h. DODI 4540.07, *Operation of the DOD Engineering for Transportability and Deployability Program.*

i. DODI 5154.06, *Armed Service Medical Regulation.*

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k. DODI 4515.13, *Air Transportation Eligibility.*

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h. JP 3-05, *Special Operations.*

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j. JP 3-11, *Operations in Chemical, Biological, Radiological, and Nuclear Environments.*

k. JP 3-13, *Information Operations.*

l. JP 3-16, *Multinational Operations.*

m. JP 3-18, *Joint Forcible Entry Operations.*

n. JP 3-30, *Command and Control of Joint Air Operations.*

o. JP 3-34, *Joint Engineer Operations.*

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v. JP 3-63, *Detainee Operations.*

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y. JP 4-01.5, *Joint Terminal Operations.*

z. JP 4-02, *Joint Health Services.*

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bb. JP 4-09, *Distribution Operations.*

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ATP-3.3.4.2(B), *Air-to-Air Refueling.*

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APPENDIX C
ADMINISTRATIVE INSTRUCTIONS

1. User Comments

Users in the field are highly encouraged to submit comments on this publication using the Joint Doctrine Feedback Form located at: https://jdeis.js.mil/jdeis/jel/jp_feedback_form.pdf and e-mail it to: js.pentagon.j7.mbx.jedd-support@mail.mil. These comments should address content (accuracy, usefulness, consistency, and organization), writing, and appearance.

2. Authorship

a. The lead agent for this publication is the US Transportation Command. The Joint Staff doctrine sponsor for this publication is the Joint Staff Logistics Directorate (J-4).

b. The following staff, in conjunction with the joint doctrine development community, made a valuable contribution to the revision of this joint publication: lead agent, Mr. Ray Van Zwienan, US Transportation Command, and Mr. Scott Amato, US Transportation Command; Joint Staff doctrine sponsor, Lt Col Elizabeth Hanson, Joint Staff J-4; Mr. Craig Corey, Joint Staff J-7, Joint Doctrine Analysis Division; and LCDR Adam Yates, Joint Staff J-7, Joint Doctrine Division.

3. Supersession

This publication supersedes JP 3-17, *Air Mobility Operations,* 20 September 2013.

4. Change Recommendations

a. To provide recommendations for urgent and/or routine changes to this publication, please complete the Joint Doctrine Feedback Form located at: https://jdeis.js.mil/jdeis/jel/jp_feedback_form.pdf and e-mail it to: js.pentagon.j7.mbx.jedd-support@mail.mil.

b. When a Joint Staff directorate submits a proposal to the CJCS 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 Services and other organizations are requested to notify the Joint Staff J-7 when changes to source documents reflected in this publication are initiated.

5. Lessons Learned

The Joint Lessons Learned Program (JLLP) primary objective is to enhance joint force readiness and effectiveness by contributing to improvements in doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy. The Joint Lessons Learned Information System (JLLIS) is the DOD system of record for lessons learned and facilitates the collection, tracking, management, sharing, collaborative resolution, and dissemination of lessons learned to improve the development and readiness of the joint force. The JLLP integrates with joint doctrine through the joint doctrine

development process by providing lessons and lessons learned derived from operations, events, and exercises. As these inputs are incorporated into joint doctrine, they become institutionalized for future use, a major goal of the JLLP. Lessons and lessons learned are routinely sought and incorporated into draft JPs throughout formal staffing of the development process. The JLLIS Website can be found at https://www.jllis.mil (NIPRNET) or http://www.jllis.smil.mil (SIPRNET).

6. Distribution of Publications

Local reproduction is authorized, and access to unclassified publications is unrestricted. However, access to and reproduction authorization for classified JPs must be IAW DOD Manual 5200.01, Volume 1, *DOD Information Security Program: Overview, Classification, and Declassification,* and DOD Manual 5200.01, Volume 3, *DOD Information Security Program: Protection of Classified Information*.

7. Distribution of Electronic Publications

a. Joint Staff J-7 will not print copies of JPs for distribution. Electronic versions are available on JDEIS Joint Electronic Library Plus (JEL+) at https://jdeis.js.mil/jdeis/index.jsp (NIPRNET) and https://jdeis.js.smil.mil/jdeis/index.jsp (SIPRNET), and on the JEL at http://www.jcs.mil/Doctrine (NIPRNET).

b. Only approved JPs are releasable outside the combatant commands, Services, and Joint Staff. Defense attachés may request classified JPs by sending written requests to Defense Intelligence Agency (DIA)/IE-3, 200 MacDill Blvd., Joint Base Anacostia-Bolling, Washington, DC 20340-5100.

c. JEL CD-ROM. Upon request of a joint doctrine development community member, the Joint Staff J-7 will produce and deliver one CD-ROM with current JPs. This JEL CD-ROM will be updated not less than semi-annually and when received can be locally reproduced for use within the combatant commands, Services, and combat support agencies.

GLOSSARY

PART I—ABBREVIATIONS, ACRONYMS, AND INITIALISMS

ACL	allowable cabin load
A/DACG	arrival/departure airfield control group
AE	aeromedical evacuation
AECT	aeromedical evacuation control team
AFRC	Air Force Reserve Command
AFTRANS	Air Forces Transportation
AFTTP	Air Force tactics, techniques, and procedures
AGL	above ground level
ALCF	airlift control flight
ALOC	air line of communications
ALTRV	altitude reservation
AMC	Air Mobility Command
AMD	air mobility division
AMLO	air mobility liaison officer
AMOG	air mobility operations group
AMOS	air mobility operations squadron
AMOW	air mobility operations wing
AMS	air mobility squadron
AMX	air mobility express
ANG	Air National Guard
AOC	air operations center
AOR	area of responsibility
APEX	Adaptive Planning and Execution
APOD	aerial port of debarkation
APOE	aerial port of embarkation
AR	air refueling
ARFOR	Army forces
ASCC	Army Service component command
ATC	air traffic control
ATO	air tasking order
ATP	Allied tactical publication
AV	asset visibility
AWACS	Airborne Warning and Control System
BCD	battlefield coordination detachment (USA)
BDOC	base defense operations center
BOS	base operating support
C2	command and control
CAF	combat air forces
CAP	combat air patrol
CBRN	chemical, biological, radiological, and nuclear
CC	component commander

CCDR	combatant commander
CCMD	combatant command
CDRUSTRANSCOM	Commander, United States Transportation Command
CDS	container delivery system
CE	circular error
CJCS	Chairman of the Joint Chiefs of Staff
CJCSM	Chairman of the Joint Chiefs of Staff manual
CJTF	commander, joint task force
COA	course of action
COCOM	combatant command (command authority)
COMAFFOR	commander, Air Force forces
CONOPS	concept of operations
CONUS	continental United States
CRAF	Civil Reserve Air Fleet
CRC	control and reporting center
CRE	contingency response element
CRF	contingency response force
CRG	contingency response group
CRT	contingency response team
CRW	contingency response wing
CSE	contingency support element
DACG	departure airfield control group
DDOC	Deployment and Distribution Operations Center (USTRANSCOM)
DEPORD	deployment order
DIRMOBFOR	director of mobility forces
DOD	Department of Defense
DODD	Department of Defense directive
DODI	Department of Defense instruction
DOS	Department of State
DTR	Defense Transportation Regulation
DTS	Defense Transportation System
DZ	drop zone
DZST	drop zone support team
18 AF	Eighteenth Air Force
ECS	expeditionary combat support
EMCON	emission control
EOC	emergency operations center
ERPSS	En Route Patient Staging System
EW	electronic warfare
EZ	exchange zone
FM	field manual (USA)
FOB	forward operating base

GAMSS	Global Air Mobility Support System
GATES	Global Air Transportation Execution System
GCC	geographic combatant commander
GDSS	Global Decision Support System
GLO	ground liaison officer
GME	global mobility enterprise
GPS	Global Positioning System
HN	host nation
HNS	host-nation support
HVCDS	high-velocity container delivery system
IAW	in accordance with
ICAO	International Civil Aviation Organization
ICDS	improved container delivery system
IGC	Integrated Data Environment/Global Transportation Network Convergence
ITV	in-transit visibility
J-4	logistics directorate of a joint staff
JA/ATT	joint airborne and air transportability training
JAOC	joint air operations center
JCS	Joint Chiefs of Staff
JDDC	Joint Deployment and Distribution Coordinator (USTRANSCOM)
JDDE	joint deployment and distribution enterprise
JDDOC	joint deployment and distribution operations center
JENM	joint enterprise network manager
JFACC	joint force air component commander
JFC	joint force commander
JFSOCC	joint force special operations component commander
JIPOE	joint intelligence preparation of the operational environment
JMC	joint movement center
JOA	joint operations area
JOPES	Joint Operation Planning and Execution System
JP	joint publication
JPADS	joint precision airdrop system
JPEC	joint planning and execution community
JPMRC	joint patient movement requirements center
JRSOI	joint reception, staging, onward movement, and integration
JTF	joint task force
JTF-PO	joint task force-port opening
LCADS	low-cost aerial delivery system

LNO	liaison officer
LRST	long-range surveillance team
LZ	landing zone
MAF	mobility air forces
MAGTF	Marine air-ground task force
MAJCOM	major command (USAF)
MC	mission-critical
MCRP	Marine Corps reference publication
MCT	movement control team
MDDOC	Marine air-ground task force deployment and distribution operations center
MHE	materials handling equipment
MILDEC	military deception
MOG	maximum (aircraft) on ground
MOPP	mission-oriented protective posture
MRT	maintenance recovery team
MTF	medical treatment facility
NAMS	National Air Mobility System
NATO	North Atlantic Treaty Organization
NEO	noncombatant evacuation operation
NGO	nongovernmental organization
NTTP	Navy tactics, techniques, and procedures
O&M	operation and maintenance
OA	operational area
OCONUS	outside the continental United States
OEF	Operation ENDURING FREEDOM
OIF	Operation IRAQI FREEDOM
OPCON	operational control
OPLAN	operation plan
OPORD	operation order
OPSEC	operations security
OSA	operational support airlift
PA	public affairs
PM	patient movement
PMR	patient movement requirement
PMRC	patient movement requirements center
POL	petroleum, oils, and lubricants
PR	personnel recovery
RAMCC	regional air movement control center
RV	rendezvous

618 AOC (TACC)	618th Air Operations Center (Tanker Airlift Control Center)
SAA	senior airfield authority
SAAM	special assignment airlift mission
SATCOM	satellite communications
SEAD	suppression of enemy air defenses
SecDef	Secretary of Defense
SOF	special operations forces
SPM	single port manager
STO	special technical operations
STT	special tactics team
SUST BDE	sustainment brigade
TACON	tactical control
TACP	tactical air control party
TACS	theater air control system
TACT	tactical aviation control team
TDD	time-definite delivery
THX	theater express
TOC	tactical operations center
TPFDD	time-phased force and deployment data
TPMRC	United States Transportation Command patient movement requirements center
TS	time-sensitive
TSC	theater sustainment command (USA)
TTP	tactics, techniques, and procedures
TWCF	Transportation Working Capital Fund
USAF	United States Air Force
USAFRICOM	United States Africa Command
USC	United States Code
USCENTCOM	United States Central Command
USCG	United States Coast Guard
USEUCOM	United States European Command
USG	United States Government
USINDOPACOM	United States Indo-Pacific Command
USMC	United States Marine Corps
USN	United States Navy
USNORTHCOM	United States Northern Command
USSOUTHCOM	United States Southern Command
USTRANSCOM	United States Transportation Command
XCDS	extracted container delivery system

PART II—TERMS AND DEFINITIONS

aerial port. An airfield that has been designated for the sustained air movement of personnel and materiel, as well as an authorized port for entrance into or departure from the country where located. (Approved for incorporation into the DOD Dictionary.)

aeromedical evacuation control team. A core team assigned to a component-numbered Air Force air operations center air mobility division that provides operational planning, scheduling, and execution of theater aeromedical evacuation missions and positioning of aeromedical evacuation ground forces. Also called **AECT.** (Approved for incorporation into the DOD Dictionary.)

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, as well as 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. (Approved for incorporation into the DOD Dictionary.)

airdrop. The unloading of personnel or materiel from aircraft in flight. (DOD Dictionary. SOURCE: JP 3-17)

airfield. An area prepared for the accommodation (including any buildings, installations, and equipment), landing, and takeoff of aircraft. (DOD Dictionary. Source: JP 3-17)

airhead. None. (Approved for removal from the DOD Dictionary.)

airland. Move by air and disembark, or unload, after the aircraft has landed or while an aircraft is hovering. (DOD Dictionary. Source: JP 3-17)

airland operation. An operation involving movement by air with a designated destination for further ground deployment of units and personnel and/or further ground distribution of supplies. (Approved for replacement of "air land operation" in the DOD Dictionary.)

airlift capability. The total capacity expressed in terms of number of passengers and/or weight/cubic displacement of cargo that can be carried at any one time to a given destination by available airlift. (DOD Dictionary. Source: JP 3-17)

airlift control team. A core team within the joint air operations center with intratheater airlift functional expertise to plan, coordinate, manage, and execute intratheater airlift operations in support of the joint force air component commander. Also called **ALCT.** (DOD Dictionary. Source: JP 3-17)

airlift mission commander. A commander designated when airlift aircraft are participating in airlift operations specified in the implementing directive. (DOD Dictionary. Source: JP 3-17)

airlift requirement. The total number of passengers and/or weight/cubic displacement of cargo required to be carried by air for a specific task. (DOD Dictionary. Source: JP 3-17)

air mobility. The rapid movement of personnel, materiel, and forces to and from or within a theater by air. (DOD Dictionary. Source: JP 3-17)

Air Mobility Command. The Air Force component command of the United States Transportation Command. Also called **AMC.** (DOD Dictionary. Source: JP 3-17)

air mobility control team. A core team within the joint air operations center that directs or redirects air mobility forces in response to requirements changes, higher priorities, or immediate execution requirements. Also called **AMCT.** (DOD Dictionary. Source: JP 3-17)

air mobility division. Located in the joint air operations center to plan, coordinate, task, and execute the air mobility mission consisting of the air mobility control team, airlift control team, air refueling control team, and aeromedical evacuation control team. Also called **AMD.** (DOD Dictionary. Source: JP 3-17)

air mobility liaison officer. A rated United States Air Force mobility air forces officer selected, trained, and equipped to assess, train, advise, and assist with mobility air forces and ground force integration for air movement and sustainment. Also called **AMLO.** (DOD Dictionary. Source: JP 3-17)

air movement. Air transport of units, personnel, supplies, and equipment, including airdrops and air landings. (Approved for incorporation into the DOD Dictionary.)

air refueling. The refueling of an aircraft in flight by another aircraft. Also called **AR.** (DOD Dictionary. Source: JP 3-17)

air refueling control team. A core team within the joint air operations center that coordinates aerial refueling to support combat air operations or to support a strategic airbridge. Also called **ARCT.** (DOD Dictionary. Source: JP 3-17)

air terminal. A facility on an airfield that functions as an air transportation hub and accommodates the loading and unloading of airlift aircraft and the in-transit processing of traffic. (Approved for incorporation into the DOD Dictionary.)

allowable cabin load. The maximum payload that can be carried on an individual sortie. Also called **ACL.** (DOD Dictionary. Source: JP 3-17)

chalk number. The number given to a complete load and to the transporting carrier. (DOD Dictionary. Source: JP 3-17)

channel airlift. Airlift provided for movement of sustainment cargo, scheduled either regularly or depending upon volume of workload, between designated ports of embarkation and ports of debarkation over validated contingency or distribution routes. (DOD Dictionary. Source: JP 3-17)

Civil Reserve Air Fleet. A program in which the Department of Defense contracts for the services of specific aircraft, owned by a United States entity or citizen, during national emergencies and defense-oriented situations when expanded civil augmentation of military airlift activity is required. Also called **CRAF.** (DOD Dictionary. Source: JP 3-17)

combat control team. A task-organized team of special operations forces who are certified air traffic controllers that are trained and equipped to deploy into hostile environments to establish and control assault zones and airfields. Also called **CCT.** (DOD Dictionary. Source: JP 3-17)

common-user airlift service. The airlift service provided on a common basis for all Department of Defense agencies and, as authorized, for other agencies of the United States Government. (DOD Dictionary. Source: JP 3-17)

cross-loading. The distribution of leaders, key weapons, personnel, and key equipment among the aircraft, vessels, or vehicles of a formation to aid rapid assembly of units at the drop zone or landing zone or preclude the total loss of command and control or unit effectiveness if an aircraft, vessel, or vehicle is lost. (DOD Dictionary. Source: JP 3-17)

departure airfield. An airfield on which troops and/or materiel are enplaned for flight. (DOD Dictionary. Source: JP 3-17)

departure point. A navigational check point used by aircraft as a marker for setting course. (DOD Dictionary. Source: JP 3-17)

director of mobility forces. The designated agent for all air mobility issues in the area of responsibility or joint operations area exercising coordinating authority between the air operations center (or appropriate theater command and control node), the 618th Air Operations Center (Tanker Airlift Control Center), and the joint deployment and distribution operations center or joint movement center to expedite the resolution of air mobility issues. Also called **DIRMOBFOR.** (Approved for incorporation into the DOD Dictionary.)

dispersion. 1. The spreading or separating of troops, materiel, establishments, or activities, which are usually concentrated in limited areas to reduce vulnerability. (JP 5-0) 2. In chemical and biological operations, the dissemination of agents in liquid or aerosol form. (JP 3-41) 3. In airdrop operations, the scatter of personnel and/or cargo on the drop zone. (JP 3-17) 4. In naval control of shipping, the reberthing of a ship in the periphery of the port area or in the vicinity of the port for its own protection in order to minimize the risk of damage from attack. (DOD Dictionary. Source: JP 4-01.2)

drop altitude. The altitude above mean sea level at which airdrop is executed. (DOD Dictionary. Source: JP 3-17)

drop zone. A specific area upon which airborne troops, equipment, or supplies are airdropped. Also called **DZ.** (DOD Dictionary. Source: JP 3-17)

dual-role tanker. An aircraft that can carry support personnel, supplies, and equipment for the deploying force while escorting and/or refueling combat aircraft to the area of responsibility. (DOD Dictionary. Source: JP 3-17)

free drop. The dropping of equipment or supplies from an aircraft without the use of parachutes. (DOD Dictionary. Source: JP 3-17)

free fall. A parachute maneuver in which the parachute is manually activated at the discretion of the jumper or automatically at a preset altitude. (DOD Dictionary. Source: JP 3-17)

Global Air Transportation Execution System. The Air Mobility Command's aerial port operations and management information system designed to support automated cargo and passenger processing, the reporting of in-transit visibility data to the Global Transportation Network, and billing to Air Mobility Command's financial management directorate. Also called **GATES.** (DOD Dictionary. Source: JP 3-17)

Global Decision Support System. The command and control system employed by mobility air forces that provides schedules, arrival and/or departure information, and status data to support in-transit visibility of mobility airlift and air refueling aircraft and aircrews. Also called **GDSS.** (DOD Dictionary. Source: JP 3-17)

high velocity drop. A drop procedure in which the drop velocity is greater than 30 feet per second and lower than free drop velocity. (DOD Dictionary. Source: JP 3-17)

intertheater airlift. The common-user airlift linking theaters to the continental United States and to other theaters, as well as the airlift within the continental United States. (Approved for incorporation into the DOD Dictionary.)

intratheater airlift. Airlift conducted within a theater with assets assigned to a geographic combatant commander or attached to a subordinate joint force commander. (DOD Dictionary. Source: JP 3-17)

jumpmaster. The assigned airborne-qualified individual who controls paratroops from the time they enter the aircraft until they exit. (Approved for incorporation into the DOD Dictionary.)

landing zone. Any specified zone used for the landing of aircraft. Also called **LZ.** (DOD Dictionary. Source: JP 3-17)

low velocity drop. A drop procedure in which the drop velocity does not exceed 30 feet per second. (DOD Dictionary. Source: JP 3-17)

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. (DOD Dictionary. Source: JP 3-17)

mobility. A quality or capability of military forces which permits them to move from place to place while retaining the ability to fulfill their primary mission. (DOD Dictionary. Source: JP 3-17)

mobility air forces. Air components and Service components that are assigned and/or routinely exercise command authority over mobility operations. Also called **MAF.** (DOD Dictionary. Source: JP 3-17)

multipoint refueling system. KC-135 aircraft equipped with external wing-mounted pods to conduct drogue air refueling, while still maintaining boom air refueling capability on the same mission. (DOD Dictionary. Source: JP 3-17)

Navy-unique fleet essential aircraft. Combatant commander-controlled airlift assets deemed essential for providing air transportation in support of naval operations' transportation requirements. Also called **NUFEA.** (DOD Dictionary. Source: JP 3-17)

node. 1. A location in a mobility system where a movement requirement is originated, processed for onward movement, or terminated. (JP 3-17) 2. In communications and computer systems, the physical location that provides terminating, switching, and gateway access services to support information exchange. (JP 6-0) 3. An element of a system that represents a person, place, or physical thing. (DOD Dictionary. Source: JP 3-0)

operational support airlift. Airlift movements of high-priority passengers and cargo with time, place, or mission-sensitive requirements. Also called **OSA.** (DOD Dictionary. Source: JP 3-17)

oversized cargo. 1. Large items of specific equipment such as a barge; side loadable warping tug; causeway section, powered; or causeway section, nonpowered that require transport by sea. 2. Air cargo exceeding the usable dimension of a 463L pallet loaded to the design height of 96 inches but equal to or less than 1,000 inches in length, 117 inches in width, and 105 inches in height. (Approved for incorporation into the DOD Dictionary.)

rapid global mobility. The timely movement, positioning, and sustainment of military forces and capabilities across the range of military operations. (DOD Dictionary. Source: JP 3-17)

senior airfield authority. An individual designated by the joint force commander to be responsible for the control, operation, and maintenance of an airfield, to include the runways, associated taxiways, parking ramps, land, and facilities whose proximity

directly affects airfield operations. Also called **SAA.** (Approved for incorporation into the DOD Dictionary.)

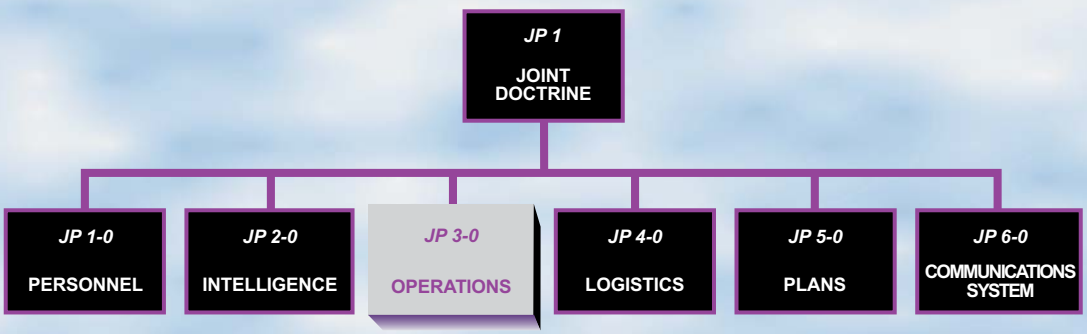
station time. In air transport operations, the time at which crews, passengers, and cargo are to be on board and ready for the flight. (DOD Dictionary. Source: JP 3-17)

unit aircraft. Those aircraft provided to an aircraft unit for the performance of a flying mission. (Approved for incorporation into the DOD Dictionary.)

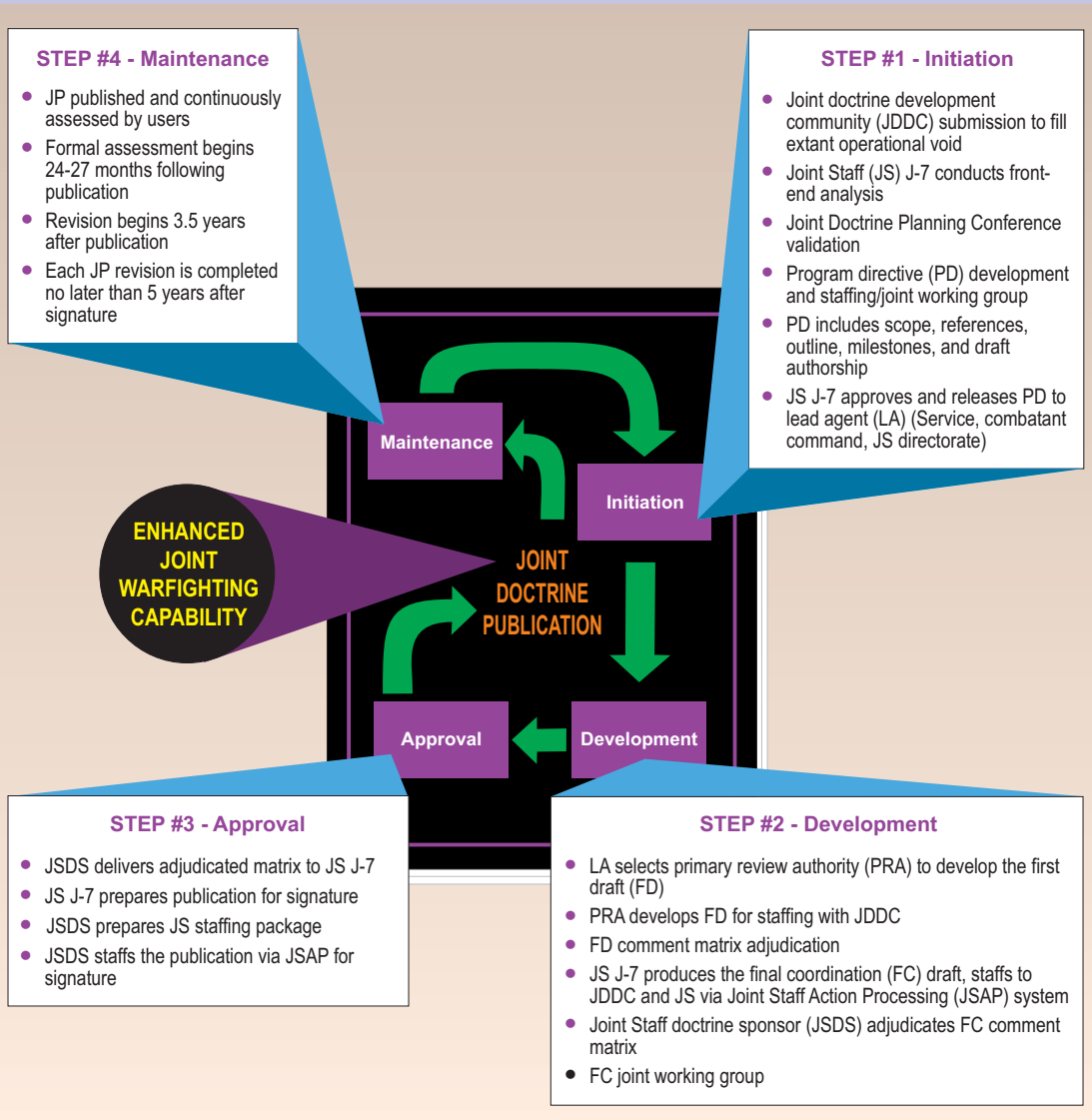
withdrawal operation. None. (Approved for removal from the DOD Dictionary.)

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JOINT DOCTRINE PUBLICATIONS HIERARCHY



All joint publications are organized into a comprehensive hierarchy as shown in the chart above. **Joint Publication (JP) 3-17** is in the **Operations** series of joint doctrine publications. The diagram below illustrates an overview of the development process:




JOINT
CHIEFS OF STAFF