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AIR MOBILITY COMMAND**

**AIR MOBILITY COMMAND
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Transportation

**DOD CONTRACTED AIRLIFT LOAD
PLANNING INFORMATION**

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This pamphlet enables application of DTR 4500.9-R, Defense Transportation Regulation – Part III Mobility, Appendix V, *Aircraft Load Planning and Documentation*; as well as AMCI 10-402, *Civil Reserve Air Fleet (CRAF)*. The guidance contained herein is applicable to all United States Air Force (USAF), Air Force Reserve Command (AFRC), Air National Guard (ANG) and Department of Defense (DOD) agencies whenever they are charged with using the CRAF assets contained herein, in accordance with DOD, inter-service, and/or Major Command (MAJCOM)

agreements. This pamphlet is intended as a load planning reference and provides an electronic link to the basic information, data, and technical specifications needed for planners (both long range and individual movement) to accomplish basic load planning of commercial aircraft when contracted or under times of activation in the Civil Reserve Air Fleet (CRAF) Program. Equipment and methods used when loading/off-loading commercial aircraft shall be approved and accomplished under direct supervision and authorization of the particular commercial air carrier on scene representative. Unlike military cargo aircraft, civilian airframes are not standardized, and vary widely, even within each carrier's fleet. Final approval shall rest with the individual carrier providing airlift services to the Department of Defense (DOD). Ensure all records created as a result of processes prescribed in this publication are maintained IAW Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW the Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). Refer recommended changes and questions on this publication to the Office of Primary Responsibility (OPR) using AF Form 847, *Recommendation for Change of Publication*; route form through the appropriate functional command channel to: Headquarters (HQ) Air Mobility Command (AMC)/DOD Commercial Airlift Division A3B, 402 Scott Dr., Unit 3A1, Scott AFB, IL 62225-5302; (618) 229-1751; AMC.A3BC.Civil.Reserve.Air.Fleet.Branch@us.af.mil. This publication may be supplemented at any level, but all Supplements must be routed to the OPR of this publication for coordination prior to certification and approval. Submit requests for waivers through the chain of command to this publication OPR for non-tiered compliance items. When new/additional information is received, it will be provided as a change to this publication. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force. Submit requests for waivers through the chain of command to the appropriate waiver approval authority, or alternately, to the publication OPR for non-tiered compliance items.

SUMMARY OF CHANGES

This publication is substantially revised and must be reviewed in its entirety. Major changes include: The series addenda have been deleted and replaced with links to aircraft websites within this publication that contain current information on aircraft load planning. Additionally, hyperlinks to the Defense Transportation Regulation (DTR) Chapter III Appendix ZZ have been included.

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Chapter 1

GENERAL INFORMATION

1.1. Purpose. This pamphlet is non-directive in nature. It provides the aircraft manufacturer specific (Airbus/Boeing) link for basic information, data, and technical specifications needed for planners to more efficiently and effectively plan commercial aircraft operating DOD missions and/or during CRAF activation. While most guidelines in this pamphlet are similar to those used in routine/non-activation DOD contracted or chartered operations involving commercial carriers, changes come into play during actual CRAF activations.

1.2. Scope. To get the most current and up to date DOD contract commercial aircraft specifications go to the following websites:

1.2.1. Airbus Aircraft Characteristics; <http://www.airbus.com/support/maintenance-engineering/technical-data/aircraft-characteristics/>, or Boeing Airport Compatibility-Airplane Characteristics; http://www.boeing.com/commercial/airports/plan_manuals.page. Equipment and methods listed are compatible with all DOD contract commercial airlift aircraft and cargo areas discussed. Civilian airframes are not standardized, and can vary widely, even within each carrier's fleet. Final approval shall ultimately rests with the individual carrier providing airlift services to the DOD.

1.3. Arrangement. This pamphlet is designed for easy reference and access to the most commonly needed information for general planning purposes. Essentially, Volume 1 will contain all information common to the DOD contract commercial airlift program and most, if not all, carriers. Each manufacturer's aircraft data can be referenced separately from the following websites:

1.3.1. Boeing aircraft use; http://www.boeing.com/commercial/airports/plan_manuals.page

1.3.2. Airbus use; <http://www.airbus.com/support/maintenance-engineering/technical-data/aircraft-characteristics/>. Use of the manufacturer site will ensure you have the most current information available for a particular carrier's aircraft type.

1.4. Supplements. Changes or supplements to this pamphlet by agencies, other than AMC, are prohibited. This does not preclude its use as a reference document for preparation of intra-agency instructional directives.

1.5. Acronyms. An explanation of the acronyms used in this pamphlet is in [Attachment 1](#).

1.6. Responsibilities. The roles and responsibilities of various agencies supporting the CRAF/DOD contract commercial airlift program are beyond the scope of this publication; a more detailed explanation can be found in AMCI 10-402. The intent of this section is to give general guidance on what may be expected in the load planning process when assigned a DOD contract commercial aircraft for movement.

1.6.1. USTRANSCOM. The Commander, US Transportation Command (TCCC), with the approval of the Secretary of Defense (SECDEF), can activate any of the three stages of the CRAF. Per Memorandum of Understanding (MOU), Department of Transportation (DOT)

concurrence is required for allocation of aircraft for CRAF Stage III activation. CRAF aircraft may be selectively activated and used up to the full numbers composing whichever stage has been approved by the SECDEF. In addition, USTRANSCOM, through TCAQ-C generates, manages, and maintains the contracts and admission process into the CRAF/DOD contract commercial airlift program.

1.6.2. Contract Administrators. The Air Mobility Command Instruction (AMCI) 10-402 *Civil Reserve Air Fleet* and United States Transportation Command Instruction (USTRANSCOMI) 24-9 *Civil Airlift Programs* provide the policies and procedures for management of commercial airlift and CRAF/DOD related contracts, agreements, and programs. USTRANSCOM maintains overall administration of DOD contract commercial airlift contracts, while the TCAQ-C Operating Locations (OL) generally manages the administration of their geographic or regional area's missions. While most users of this volume will go through normal channels (i.e., use of their service's movement validation process) to make airlift requests, the following table is provided for information.

Table 1.1. Contract Administrators.

Contract Administrator Office	Location	Contact Number
USTRANSCOM TCAQ-CM	Scott AFB, IL	DSN (312) 770-7077 Com'1 (618) 220-7077
OL-R TCAQ-CM	Ramstein AB, Germany	DSN (314) 479-4215
OL-T TCAQ-CM	Yokota AB, Japan	DSN (315) 225-8574

1.6.3. Individual commercial/DOD contract commercial airlift (Contractor).

1.6.3.1. FARs. The contractor shall provide safe on-loading and off-loading, transportation, protection, accountability, and timely delivery of government cargo in accordance with applicable Federal Aviation Regulations (FARs) and the provisions of their contract. Government personnel may assist with cargo loading when requested by the contractor, however the contractor is responsible for and shall ensure cargo is properly loaded and secured in accordance with the contractors' aircraft Weight and Balance Manuals and the FARs.

1.6.3.2. Load Plan. The contractor shall be responsible for load planning, weight and balance, cargo restraint, and any required special handling.

1.6.3.3. Civil Airlift Support Specialist (CASS). For passenger missions, a contractor representative shall be available in person or via telephone at all points at least 3 hours in advance of all scheduled departures or actual arrivals, whichever is earlier. For cargo missions, CASS personnel shall be available at the originating location 4 hours prior to scheduled departure time for narrow body aircraft and 6 hours prior to scheduled departure time for wide body aircraft. At all enroute, turnaround, and terminating points, CASS shall be available at least 3 hours in advance of all scheduled departures or actual arrivals, whichever is earlier. This representative shall be responsible for providing

necessary information and coordinating with government personnel, and shall have the authority to react to and effect necessary changes.

1.6.4. AMC. The normal support provided by HQ AMC through 618 Air Operations Center (AOC), Tanker Airlift Control Center (TACC); Fixed, Enroute, or Mobile Global Air Mobility Support System (GAMSS) assets; and/or Contingency Response Groups (CRG)/Contingency Response Elements (CREs) still exists with activated DOD contract commercial airlift assets.

1.6.5. Users of DOD contract commercial airlift. In addition to the roles and responsibilities listed in DTR 4500.9-R it is emphasized that the user MUST:

1.6.5.1. Load in accordance with the load breakdown provided by the carrier/contractor on AF Form 4080, *Load/Sequence Breakdown Worksheet*, or equivalent.

1.6.5.2. Provide to the contractor actual weights for all items transported in the cargo compartment. Actual, or interrogated weights (where currently calibrated scales are not available) for passengers will be provided to the contractor.

Chapter 2

LOAD PLANNING

2.1. General Principles. This chapter will provide some basic load planning concepts. However, the focus of this chapter is to expand on the similarities and the differences of commercial airlift versus military airlift load planning. Sub-topics will be expanded further in their own chapters.

2.2. Definitions and Meaning.

2.2.1. CRAF/DOD Contract Commercial Airlift. The CRAF/DOD contract commercial airlift program is a voluntary contractual program where civil carriers agree to augment military airlift during a SECDEF designated crisis in exchange for peacetime Department of Defense business. During peacetime, regional contingencies, and major exercises, DOD contract commercial airlift carriers voluntarily contract to fulfill personnel and cargo movement requirements. DOD contract commercial airlift carriers are contracted daily to fly various categories of airlift, to include channel airlift, SAAMs, exercise support, contingency support, and charter airlift, these ARE NOT CRAF missions. This augmentation is crucial to all common-users since it allows USTRANSCOM to continue to meet routine scheduled and surge commitments simultaneously. When authorized by the SECDEF carriers participating in the DOD contract commercial airlift program may be activated in one of three CRAF stages with each stage providing greater airlift capacity/capability. 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).

2.2.2. Historic Usage. Up to 93% of all passengers and approximately 40% of all cargo was moved via CRAF during the Stage II activation for Operation DESERT STORM and the Stage I (passenger only) activation for Operation IRAQI FREEDOM. Furthermore, historical data has shown that DOD contract commercial airlift typically operates at a sustainment average of 87% of the maximum allowable cabin load (ACL) listed in this pamphlet.

2.3. Loading Restrictions. See: [Chapter 3](#).

2.4. Center of Balance Considerations. The carrier is responsible for load planning, weight and balance, cargo restraint/tiedown, and any required special handling to include loading operations supported by government personnel. The carrier will ensure cargo is properly secured in accordance with FARs and individual aircraft CG and weight and balance manual/limits. When an aircraft load plan exceeds the ACL, the carrier shall decide the number of passengers, weight, or articles that shall be loaded. The passenger ACL will be reduced with the concurrence of the administrative contracting officer (ACO).

2.5. Ease of Onload/Ease of Offload Considerations. See: [Chapter 4](#).

2.6. Cargo Categories and Considerations. See: [Chapter 5](#) and [Chapter 6](#).

2.6.1. Bulk. General cargo, typically loaded on 463L pallets (108 inches by 88 inches) or containers. DOD contract commercial airlift cargo aircraft will at a minimum, arrive at the onload location with their main decks configured for 463L pallets and lower lobes ready for bulk (floor loaded) cargo.

2.6.2. Oversize. 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. This cargo is air transportable on most civilian contract cargo carriers, but dimensional compatibility must be checked, and compliance with aircraft weight and balance manuals and FAR's must be maintained.

2.6.3. Outsize. Exceeds oversize dimensions (over 1,000 inches long, 117 inches wide, and/or 105 inches high in any one dimension) and requires the use of a C-5 or C-17 aircraft or surface transportation. **Exception:** Dependent on the actual piece of cargo, certain series of B747 and/or AN-124 may be able to accept it, provided compliance with aircraft weight and balance manuals and FAR's is ensured.

2.6.4. Rolling Stock. Equipment that can be driven or rolled directly into the aircraft cargo compartment. By FAA definition, rolling stock or any cargo not capable of being carried on a Unit Load Device (ULD) and secured using nets is SPECIAL CARGO. Most civilian aircraft **will not** accept rolling stock. Those that do, must comply with FAA requirements and their individual weight and balance manual regarding Special Cargo. Compliance with aircraft weight and balance manuals, tiedown requirements and FAR's is **mandatory** in all cases where rolling stock is offered and loaded.

2.6.5. Special Cargo. Items requiring specialized planning/preparation and handling procedures, such as rolling stock, hazardous cargo, or tall rigid cargo requires coordination with the carriers civil airlift support specialist (CASS) for detailed information regarding special cargo.

2.7. Hazardous Cargo (HAZMAT) Considerations. Airlift of military HAZMAT utilizing DOD contract commercial air carriers is authorized IAW Department of Transportation Special Permits (DOT-SP) 7573 and 9232, and is prepared IAW DTR 4500.9-R, Part III, App. J and App. BB, and AFMAN24-204(I), Attachment 23.

2.8. Passenger Considerations. See [Chapter 7](#).

2.9. Restraint Criteria. Air Transportability Test Loading Activity (ATTLA) standards for restraint criteria are listed in [Table 2.1](#). While these limits apply to securing loads onto USAF military cargo aircraft, DOD contract commercial aircraft shall follow FAR's and all requirements in aircraft specific weight and balance manuals. **Note:** These are minimum levels of restraint. Individual carriers can require more or less than this as required by FARs, weight and balance manuals, or other directives.

Table 2.1. Restraint Criteria.

Direction	Level	Input Condition
Forward (fwd.) 1	3G	Hard landing or sudden deceleration
Aft or rear	1.5G	Sudden acceleration
Lateral (side)	1.5G	Skidding
Up (vertical)	2G	Extreme turbulence
Down 2	4.5G	Hard landing

If personnel are located in front of cargo, the cargo item(s) must be restrained to 9Gs forward. Primary cargo must be restrained to cargo floor; secondary cargo must be restrained by primary cargo.

2.10. Commercial Aircraft Ground Times. 618th AOC (TACC) planners and controllers will ensure DOD contract commercial cargo mission ground times are based on narrow body or wide body aircraft types as listed in Table 2.2 and commercial contracted passenger mission ground times are based on contracted allowable cabin load (ACL) as listed in [Table 2.3](#).

2.10.1. Station Delay. When a commercial aircraft departs a station in delay, 618th AOC (TACC)/XOC controllers will contact the commercial carrier and USTC/TCAQ. The commercial carrier will provide a plan that attempts to return the mission back onto the originally scheduled times as allowed by follow-on arrivals, slot times, and mission needs. 618th AOC (TACC)/XOC controllers will ensure prior coordination with applicable agencies (Air Mobility Command Center, Command Post, Base Ops, Aerial Port, Etc.) is accomplished and appropriate deviation codes are accurately applied to all mission types.

Table 2.2. DOD contract commercial airlift Planning Ground Times (Cargo Aircraft).

Aircraft Type	Originating	Terminating Stations	Enroute Stations	Turn-around Stations	Exception L-100
Narrow-Body	2+00	2+00	2+00	2+30	1+00
Wide-Body	3+00	3+00	3+30	3+30	N/A
Notes:					
When a Wide-Body aircraft terminates an active mission and originates to another mission, ground time is 3+30 hours.					
When establishing schedules, 618th AOC (TACC) planners and commercial schedulers retain flexibility to determine actual ground times based on particular mission needs.					

Table 2.3. DOD contract commercial airlift Planning Ground Times (Passenger Aircraft).

Contracted ACL	Originating	Terminating Missions	Enroute Missions	Turn-around Missions
250 or less	2+00	2+00	N/A	N/A
251 or more	3+00	3+00	N/A	N/A
170 or less (small aircraft)	N/A	N/A	1+30	2+00
171 – 260 (medium aircraft)	N/A	N/A	2+00	3+00
261 or more	N/A	N/A	3+00	3+00

(large aircraft)				
Mixed	2+00	2+00	2+00	2+00
Notes: When a Wide Body Aircraft terminates an active mission and originates to another mission, ground time is 3+30 hours. When establishing schedules, 618th AOC (TACC) planners and commercial schedulers retain flexibility to determine actual ground times based on particular mission needs.				

Chapter 3

DIMENSIONAL PLANNING FACTORS

3.1. Types. Civilian airframes vary widely from carrier to carrier and within a carrier's fleet. It is not uncommon that notable variations occur between the same type, model, and series of civil aircraft, depending upon the needs of the carrier. Therefore, use the information at each aircraft manufacturer's specific website for general reference/planning purposes only. Boeing: http://www.boeing.com/commercial/airports/planning_manuals.page or Airbus: <http://www.airbus.com/support/maintenance-engineering/technical-data/aircraft-characteristics/>. Specific information (such as the number of passenger seats) may not be known until a specific aircraft arrives at the onload station.

3.1.1. Body Types. Generally, there are two basic body types – narrow and wide-body.

3.1.1.1. Narrow-body. Narrow-body aircraft have a cabin diameter of approximately 10 – 13 ft. across and two rows of passenger seats (2 – 6 abreast) with a single center aisle.

3.1.1.2. Wide-body. Wide-body aircraft have a wider cabin diameter (about 16 – 20 ft. across), have twin aisles for passengers (seating up to 11 abreast), and are more often used to ship cargo than narrow-body aircraft.

3.1.2. Compartments.

3.1.2.1. Types. The FAA defines the various compartments in an aircraft from Class A - E based on ventilation, fire detection/protection, and accessibility. When planning for loading, most compartments are simply referred to as: passenger, cargo, bulk, and baggage compartments. Furthermore, geographic locations are also attached (e.g., forward lower cargo compartment, main deck). The words “deck” and “lobe” are virtually synonymous with compartment.

3.1.2.2. Dimensions. Most civilian aircraft do NOT present a uniform loading dimension throughout each compartment. Expect narrowing/tapering along any compartment shape. Potentially, cargo must be contoured to fit into a given compartment, so cargo/pallet buildup and placement shall account for this.

3.1.3. Passenger Compartment Categories. There are primarily three categories that are referred to: passenger, freight, and COMBI. COMBI aircraft are by FAA rule defined as passenger aircraft.

3.2. Carrier Information. The carrier shall provide the following minimum information to 618 AOC (TACC) no later than 24 hours prior to departure time: type aircraft; tail number; ACL in passenger seats and pounds for all scheduled segments; cube allowable in the belly compartments and belly weight by compartment.

3.3. Manufacturer Specifications. The individual manufacturer's dimensional information is accessed through one of the two following public domain websites: http://www.boeing.com/commercial/airports/planning_manuals.page or <http://www.airbus.com/support/maintenance-engineering/technical-data/aircraft-characteristics/>. These sites are used by commercial industry for airport planning, firefighting and daily operations, and information pertaining to specific aircraft and may change without

notice. While this is a basic starting point, all dimensions shall be verified with the carrier upon arrival, since airframes may have been modified. Door opening dimensions, cargo compartment/lobe height, length, width, and seating for example are all subject to change with each airframe without notice.

3.4. Loading time. The clearance available during loading influences both the amount of time necessary to load an item and the skill level required of the loading crew. In general, whenever minimum clearance between the item and the aircraft structure exists, ground maneuvering and flight operations are influenced. When the dimensions of the cargo become an issue with aircraft dimensional compatibility, the loading times listed in **Table 2.2** should be reconsidered and adjusted as necessary.

3.5. Air Transport Certification Requirement. Just because an item is shipped via DOD contract commercial airlift, it does NOT exempt it from being certified for air transport with ATTLA if deemed an “air transportability problem item” by exceeding ANY of the following parameters. Contact ATTLA at attla@wpafb.af.mil for further guidance.

Table 3.1. ATTLA Certification Parameters.

Length: 20 ft. (240 in)	Load Concentration: 1,600 lbs. per linear ft.
Width: 8 ft. (96 in)	Floor contact pressure: 50 psi
Height: 8 ft. (96 in)	Axle loads: 5,000 lbs.
Weight: 10,000 lbs.	Wheel loads: 2,500 lbs.
Other: Any item that requires special equipment or procedures for loading.	

Chapter 4

MATERIAL HANDLING EQUIPMENT (MHE)

4.1. Definitions.

4.1.1. Global Air Mobility Support System (GAMSS) is a key element of air mobility and provides responsive, worldwide support to airlift and air refueling operations. The three core functions provided through the GAMSS are: command and control, maintenance, and aerial port. GAMSS is normally provided by AMC at Fixed, Enroute, and Mobile locations.

4.1.2. MHE. Describes equipment used in packaging, handling, or transporting cargo in preparation for air shipment. This chapter focuses mainly on the types that will enable on/offloading of cargo and/or passengers onto DOD contract commercial airlift aircraft.

4.2. Responsibilities. Proper coordination of GAMSS elements and taking the extra precaution to personally ensure all necessary MHE requests are accomplished will make on/offloads easier.

4.2.1. AMC. DOD contract commercial airlift logistics support during CRAF activations will be coordinated with the AMC Crisis Action Team (CAT) and will be monitored by TCAQ and HQ AMC/A3B. 618 AOC (TACC) will be responsible for assuring availability of adequate cargo and passenger MHE, to support planned workload at all on-load and off-load locations. During periods of CRAF activation, AMC CAT will position any DOD contract commercial airlift carrier-specific MHE that exceeds the contractor capability to position. Outside of times of activation (i.e., normal, commercial augmentation airlift support), positioning of carrier-specific MHE remains the responsibility of the carrier.

4.2.2. Military Host/Supporting Installation. The host/supporting installation will (1) provide Arrival/Departure Airfield Control Group (A/DACG) and support deploying mobility forces as requested (i.e., MHE, container handling equipment, manpower, fuel, or staging facilities), and (2) be the primary provider of mobility forces and MHE support when the aerial port/air terminal is the host.

4.2.2.1. Use of Government-furnished MHE. Government-furnished MHE will be used at military on/offload airfields whenever possible.

4.2.3. Individual DOD contract commercial airlift Carrier (Contractor).

4.2.3.1. Use of Existing Carrier Assets. To the maximum extent possible, logistics support of DOD contract commercial airlift aircraft will be provided by the participating carrier and obtained from existing carrier assets. Shortages in such support may be supplemented by carrier contract and/or arrangements with other sources. If DOD contract commercial airlift carriers cannot support themselves, requests for assistance should be forwarded to HQ AMC/A3B.

4.2.3.2. Additional Tiedown Equipment. When additional tiedown equipment is necessary to secure the loads within the aircraft, and prior coordination is made, the contractor shall furnish it.

4.2.3.3. Commercial Pallets. In some cases, military necessity may require hand loading of cargo. When required, contractors shall furnish commercial pallets to be used as a subfloor for the lower lobes. Notification will be provided by the ACO.

4.2.3.4. Special MHE. Special handling equipment (which is not commonly used on military aircraft), such as tow bars, may not be available at military installations and must therefore, be furnished by the contractor. Contractor shall also furnish personnel to operate and maintain such equipment. Positioning of contractor MHE will normally be the contractor's responsibility.

4.2.4. Users of DOD contracted commercial Airlift

4.2.4.1. User-Furnished Cargo Equipment. Cargo handling equipment, including 463L pallets and associated cargo restraining nets and tiedown equipment will be furnished by military customers being moved.

4.2.4.2. User-Furnished Services. The following will normally be provided by the user of DOD contracted commercial airlift assets whenever possible, unless on/offload locations have GAMSS/civilian aerial port assets to handle the movement:

4.2.4.2.1. Passenger processing, manifesting, and documenting.

4.2.4.2.2. Baggage handling (weigh, tag, load and unload).

4.2.4.2.3. Cargo manifesting and on/offloading.

4.3. DOD CONTRACT COMMERCIAL AIRLIFT MHE Compatibility. In the past, most military MHE was designed to be specifically used on military airlift assets; however, this is no longer the case. Some models of MHE may or may not be suitable for use on commercial assets. See the appropriate aircraft manufacturers planning website, http://www.boeing.com/commercial/airports/planning_manuals.page, or <http://www.airbus.com/support/maintenance-engineering/technical-data/aircraft-characteristics/> for the most current information to assist in planning for MHE needs with particular airframes.

4.4. Conclusion. AMC's MHE is dedicated to permanent or enroute aerial ports for daily operations. If MHE must be repositioned to on/offload locations it will require extensive coordination, be expensive, and time consuming, therefore, users of commercial assets must provide as much MHE from local sources as possible. Remember to plan and coordinate for the use of MHE at deployed locations in advance. If MHE support is required, contact an affiliated ALCF/CRE/CRG unit or AMC CAT as early as possible to arrange for assistance and coordination.

Chapter 5

ROLLING STOCK/LOOSE CARGO CONSIDERATIONS

5.1. Floor Loading Overview. The non-structural nature of many commercial aircraft floor surfaces requires cargo to be palletized or loaded on a palletized or shored subfloor. The air carrier's aircraft specific weight and balance manual addresses the airplane's floor and structural load limits concerning any cargo to be loaded directly on the airplane's floor. Any rolling stock that will not fit on a ULD and is restrained using commercial cargo nets shall be considered "Special Cargo" as defined by the FAA. Carriers are responsible for the FAA approved strapping plan for any and all Special Cargo. Wheeled cargo/loose cargo can be loaded directly aboard the aircraft when a subfloor is installed provided the aircraft weight and balance manual allows.

5.1.1. Shoring is used to distribute a load over a larger surface area, making it possible to carry a load with a higher weight concentration than normally would be allowed. Shoring will only increase the area over which a load is distributed it will not increase the loading or weight limits of the aircraft floor. Plywood and dimensional lumber are commonly used for shoring purposes. Shoring must consist of wood at least thick enough to support the load distribution, but generally a minimum of $\frac{3}{4}$ inch is used. The air carrier's procedures should address how to distribute (shore) the weight of cargo having a load bearing weight greater than a floor load limit. The user of commercial/DOD contract commercial airlift will provide shoring as required.

5.2. Actual Weights. All items transported in the cargo compartment of a commercial aircraft will be weighed and actual (not planned) weights will be provided to the contractor.

5.3. Bulk vs. Loose/Floor Loaded Cargo. It must be noted that the military definition of bulk cargo (see paragraph 2.6.1) differs from how the FAA defines it. According to FAA AC 120-85A, bulk cargo is generally defined the same as what the military would term loose/floor loaded cargo. Bulk compartments protect aircraft systems and structures against damage from shifting cargo for all phases of flight. A civilian carrier cargo compartment will be categorized as either a "bulk load" or "non-bulk load" compartment. **There may be certain cargo compartments that can ONLY accept loose/floor loaded cargo.**

5.3.1. Bulk Load Compartment. A compartment that has provisions that prevent bulk cargo from: (1) shifting and damaging airplane systems/structures, and (2) shifting to the extent that the airplane CG exceeds the certified limits.

5.3.2. Non-bulk Load Compartment. An aircraft's systems and structures with a non-bulk load cargo compartment are protected by ULDs and the cargo restraint system. ULDs and other load restraints will ensure that the cargo structural loads are only applied to the aircraft through the ULD-aircraft interface of the cargo restraint system.

CHAPTER 6

PALLETIZED CARGO CONSIDERATIONS

6.1. Overview. This chapter will discuss any unitized load, which has been assembled and packaged in such a way as to move from source to destination without the need to break down or reassemble it for air transport.

6.2. Military 463L Cargo Handling System. 463L is the common designation for military air cargo handling equipment. The 463L system consists of separate, but interdependent, equipment including: air terminal Mechanized Material Handling Systems (MMHS), on-board aircraft cargo handling systems, ground handling equipment, pallets, and nets.

6.2.1. 463L Pallet Use. Normally, the HCU-6/E pallet is used in military airlift operations; however, CONEX and ISU containers with their own or incorporated integral base to lock into a 463L rail system can also be used. DOD contract commercial airlift **aircraft shall be equipped with mechanized roller systems or rail systems that are compatible with 463L configured pallets and equipment.**

6.3. Commercial Cargo Handling System. Civil aircraft cargo handling systems or Cargo Loading Systems (CLS) are not standardized among carriers and can vary widely. However, most carriers will use a restraint system designed for Unit Load Devices (ULDs).

6.3.1. Unit Load Device (ULD). A ULD is any type of freight container, aircraft container, or aircraft pallet with or without a net that is capable of being locked into the aircraft CLS. A ULD may or may not be certified by the FAA. 463L pallets may or may not be authorized for use by a carrier based on what is allowed in their specific weight and balance manual.

6.4. Commercial ULD/Pallets for Load Planning. Although the military uses 463L pallets/containers for movements, most DOD contract commercial airlift aircraft pallet capacities are measured by how many IATA code PAG- / P1P- type LD7s (88 inches × 125 inches) that can be stored. LD7s also come in two different floor dimensions (96 inches × 125 inches as well as 88 inches × 125 inches).

6.5. Actual Weights. All items transported in the cargo compartment of a commercial aircraft will be weighed and actual weights will be provided to the carrier. Carriers may ask for the latest calibration information for scales used to weigh cargo.

Chapter 7

PASSENGER CONSIDERATIONS

7.1. Overview. Passengers on DOD Contract commercial airlift will be planned for and processed the same as on military airlift, with some of the differences listed below.

7.2. Passenger Weights. The following weights and procedures apply to individuals transported on DOD contract commercial airlift in accordance with DTR 4500.9-R, Part III, App. V. Actual weights will always be used when manifesting passengers on commercial aircraft.

7.2.1. Planning Weights. The weights in **Table 7.1** are for planning purposes only. Standard body weights will not be used for troops transported on commercial aircraft.

Table 7.1. Planning Weights.

Troop Type	Equipment			Planning Weight
Non-combatant equipped				175 lbs.
Combat-equipped	carry-on bag only			210 lbs.
Combat-equipped		web gear	weapon	210 lbs.
Combat-equipped	carry-on baggage	web gear	weapon	230 lbs.
War Planning Weight	full battle dress			400 lbs.

7.2.2. Actual Weights. Use actual scaled weights of individuals with uniform, boots, helmet, weapon, web gear, and hand-carried bag.

7.2.3. Interrogated Weights. If scales are not available, interrogated weights of individuals can be used. After asking each individual their weight, use the following additive item weights in **Table 7.2** as necessary to determine total weight of the traveler.

Table 7.2. Additive Interrogated Weights.

Equipment	Use for Interrogated Weight
Boots	5 lbs.
Helmet	5 lbs.
Uniform	5 lbs.
Web gear	12 lbs.
Weapon	10 lbs.
Hand-carried bag	20 lbs.

7.3. Seating Charts. The seating charts on the manufacturer specific website are meant for standard planning. A variety of seating configurations are possible. The exact seating number will be given when a particular airframe is assigned.

7.4. Seating Troops. Depending on the status of DOD Contract commercial airlift (e.g., contract, charter, or CRAF activation), as well as the point of embarkation (i.e., military or civilian airfield), seats may or may not be assigned by use of boarding passes.

7.5. TSA Requirements. On or offload at a civilian airfield will require troops/passengers to follow the procedures for travel by the Transportation Security Administration (TSA). Carry-on restrictions apply to all passengers required to process through the AMC passenger terminal or equivalent when at a non-AMC location. For most recent TSA travel guidelines, go to <http://www.tsa.gov/traveler-information>.

7.6. Individual Weapons and Combat Issue.

7.6.1. Overview. For shipping individual weapons, follow DTR 4500.9-R, Part III, App. BB, Procedures for Transporting Weapons, Ammunition, and Hazardous Materials (HAZMAT) Aboard Commercial Aircraft in Scheduled Service and Department of Defense (DOD) – Owned or Controlled Aircraft.

7.6.2. General Guidance. Users of DOD contract commercial airlift must follow the appropriate procedures listed in the publication above, the following provides additional guidance in shipping individual weapons.

7.6.2.1. Weapons. Weapons are individual, government-issue weapons. All other weapons such as crew-serviced weapons (e.g., M-240, 50 caliber) shall be transported as baggage or cargo and will be placed in the baggage/cargo hold or compartment. Troops will not be granted access to crew-serviced weapons at any time.

7.6.2.2. Options. The only two options available for shipping individual weapons are:

7.6.2.2.1. Stowing inoperable, unloaded firearms with troops in the passenger compartment and shipping ammunition as baggage or cargo. All firearms stowed in the aircraft cabin will be rendered inoperable in the same manner so no firearm can be made useable with parts from another firearm; or

7.6.2.2.2. Shipping assembled, unloaded, and containerized firearms and ammunition as baggage or cargo. There is NO option authorizing troops with loaded weapons or possession of their basic combat load in the passenger compartment of any DOD contract commercial airlift carrier.

7.6.2.3. Use. Option (1) may only be exercised when the total cabin load of the aircraft consists exclusively of DOD-sponsored forces in support of training exercises or contingency operations, and when authorized in the operations plan or mission directive.

7.6.2.4. Authority. The authority for allowing troops to travel with inoperable, unloaded firearms in the passenger compartment will come from the Combatant Commander, based on needs of the movement. The troop/movement commander does not make this determination solely on the basis of ease of loading. Furthermore, advance coordination and approval with the contract carrier, civilian airfields and facilities, and individual aircraft commanders must be obtained.

7.7. Loading of Baggage. In addition to following the guidance in Chapter 5, the guidance provided below is meant to aid in planning how to load baggage on an all-passenger configured aircraft.

7.7.1. Loading of Passenger Baggage. There are at least four different methods for the loading of baggage into civilian aircraft. They include commercial baggage containers, tri-wall containers, bulk loading by hand, and palletizing.

7.7.1.1. Commercial Baggage Containers. Baggage containers normally are not the most desirable for contingency deployments. The use of commercial baggage containers normally requires that the loading of bags be delayed until the aircraft arrives at the onload location and may require specialized MHE be brought in to load the containers. However, in the event that commercial baggage containers are used, carriers will furnish the appropriate type.

7.7.1.2. Tri-Wall Containers. Tri-wall containers are essentially pre-built boxes that can be used as baggage containers. These are normally available through transportation facilities on military installations. Loading may be accomplished using a forklift or K-loader. For ease of handling, use the smallest tri-wall container available, with consideration for size of contents and shape (contour) of the compartment into which it will be loaded.

7.7.1.3. Loose (Bulk) Loading by Hand. Bulk-loading baggage by hand can be an efficient use of available personnel and equipment under a contingency situation. Hand-loading requires minimal MHE. Hand-loading also permits the weighing and loading of bags onto flatbed trucks or similar type vehicle prior to aircraft arrival. When hand-loading bags, each bag shall be weighed individually and total weight per hold must be accurate for weight and balance purposes.

7.7.1.4. Palletizing. The use of 463L pallets (HCU-6/E) as a baggage pallet on civil aircraft is possible, but is dependent on aircraft type and which compartment will be used for loading.

DARREN V. JAMES, Brig Gen, USAF
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and Nuclear Integration

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References*****Department of Defense/Unified Combatant Commands**

DTR 4500.9-R, *Defense Transportation Regulation – Part III Mobility*, July 2011

DTR 4500.9-R, Appendix J – *Hazardous Materials (HAZMAT) Certification and Mobility Procedures*, July 2011

DTR 4500.9-R, Appendix K – *Hazardous Materials (HAZMAT) Special Permits (SP)*, July 2011

DTR 4500.9-R, Appendix V – *Aircraft Load Planning and Documentation*, July 2011

DTR 4500.9-R, Appendix BB – *Procedures for Transporting Weapons, Ammunition and Hazardous Materials (HAZMAT) Aboard Commercial Aircraft in Scheduled Service and Department of Defense (DOD) – Owned or Controlled Aircraft*, July 2011

JP 3-17, *Air Mobility Operations*, 30 September 2013

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AFDD 3-17, *Air Mobility Operations*, 14 February 2013

AFMAN24-204(I), *Preparing Hazardous Materials for Military Air Shipments*, 3 December 2012

AFPAM 10-1403, *Air Mobility Planning Factors*, 12 December 2011

AMCI 10-202V4, CL-1, *Expeditionary Air Mobility Support Operations-Checklist*, 2 May 2006

AMCI 10-402, *Civil Reserve Air Fleet (CRAF)*, 17 November 2011

AMC Affiliation Workbook 36-101 Volume I, *Equipment Preparation Course*

AMC Affiliation Workbook 36-101 Volume II, *Airlift Planner's Course*

Other Agencies

FAA, Order 5300.7, *Standard Naming Convention for Aircraft Landing Gear Configurations*, 06 October 2005

ATTLA, MIL-HDBK-1791, *Designing for Internal Aerial Delivery in Fixed Wing Aircraft*, 14 February 1997

IATA, *ULD Technical Manual (ULD)*

Airbus, 198 Van Buren Street Suite 300 Herndon, VA 20170

Boeing, P.O. Box 3707 Seattle, Washington 98124

Prescribed Forms

No Prescribed Forms

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

DD Form 2130-12, *B747-100F/200C/200F Load Plan*

DD Form 2130C, *Aircraft Load Plan Continuation*

Abbreviations and Acronyms

A/DACG—Arrival/Departure Airfield Control Group

A/R—Aerial Refueling

A3—Directorate of Operations/HQ AMC

A3B—DOD Commercial Airlift Division/HQ AMC

A3BA—DOD Analysis & Automation Branch/HQ AMC

A3BC—DOD Civil Reserve Air Fleet Branch/HQ AMC

A3BS—DOD Surveillance & Evaluations Branch/HQ AMC

A4—Directorate of Logistics/HQ AMC

A4M—Maintenance Division/HQ AMC

A4TC—Cargo & Traffic Management Policy Branch/HQ AMC

A4TP—Passenger Policy/HQ AMC

AA&E—Arms, Ammunition, & Explosives

AACG—Arrival Airfield Control Group

ABC—Aft Bulk Compartment

ACA—Airlift Clearance Authority

ACA—Airspace Control Authority

AC—Aircraft Commander

ACL—Allowable Cabin Load

ACM—Additional Crewmember

ACO—Administrative Contracting Officer

ACO—Airspace Control Order

ADCON—Administrative Control

ADUSD (TP)—Assistant Deputy Under Secretary of Defense for Transportation Policy

AFDD—Air Force Doctrine Document

AFMAN—Air Force Manual

AFPAM—Air Force Pamphlet

AFRC—Air Force Reserve Command

ALCF—Airlift Control Flight

AMC—Air Mobility Command

AMC/CC—Commander, Air Mobility Command
AMCI—AMC Instruction
AMCPAM—AMC Pamphlet
ANG—Air National Guard
AO—Area of Operations
AOC—Air Operations Center
AOR—Area of Responsibility
ATTLA—Air Transportability Test Loading Agency
CASS—Civil Airlift Support Specialist
CC—Commander
CFR—Code of Federal Regulations
CG—Center of Gravity
CLS—Cargo Loading System
COMBI—Combination
CONEX—Container Express
CRAF—Civil Reserve Air Fleet
CRE—Contingency Response Element
CRG—Contingency Response Group
DACG—Departure Airfield Control Group
DOD—Department of Defense
DO—Director of Operations
DOT—Department of Transportation
DOTSP—Department of Transportation Special Permit
DSN—Defense Switched Network
DTR—Defense Transportation Regulation
FAA—Federal Aviation Administration
FARs—Federal Aviation Regulations
FWD—Forward
GACL—Guaranteed Allowable Cabin (Or Cargo) Load
GAMSS—Global Air Mobility Support System
GCCS—Global Command and Control System
HAZMAT—Hazardous Materials

HQ—Headquarters

IATA—International Air Transportation Association

IAW—In Accordance With

ICAO—International Civil Aviation Organization

ICODES—Integrated Computerized Deployment System

ISB—Intermediate Staging Base

ISU—Internal Slingable Unit

MAJCOM—Major Command

MHE—Material Handling Equipment

MMHS—Mechanized Material Handling System

MOU—Memorandum of Understanding

NM—Nautical Mile (Statute Mile x 1.15)

OPR—Office of Primary Responsibility

SECDEF—Secretary of Defense

TACC—Tanker Airlift Control Center

TCCC—Commander, US Transportation Command

TSO—Technical Standards Order

USTRANSCOM—United States Transportation Command