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CIVIL RESERVE AIR FLEET LOAD PLANNING

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This pamphlet series 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 series is intended as a load planning guide and provides the basic information, data, and technical specifications needed in order for planners (both long range and individual movement) to load plan aircraft in the Civil Reserve Air Fleet (CRAF). Equipment and methods listed are compatible with all CRAF aircraft and cargo areas discussed. It must be noted that, unlike military cargo aircraft, civilian airframes are not standardized, and can vary widely, even within each carrier's fleet. Final approval, therefore, ultimately rests with the individual contractor providing airlift services to the Department of Defense (DOD). Ensure all records created as a result of processes prescribed in this publication are maintained In Accordance With (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed IAW the Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS).

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SUMMARY OF CHANGES

This publication is substantially revised and must be reviewed in its entirety. Major changes include: The series has been renumbered, reorganized, AMCPAM24-2Volumes 4,8,and 9 have been merged into this publication adding additional data to this product.

Chapter 1

GENERAL INFORMATION

1.1. Purpose. This pamphlet series is non-directive in nature. It provides the basic information, data, and technical specifications needed in order for planners to more efficiently and effectively load plan commercial aircraft during CRAF activation. While most guidelines in this pamphlet are similar to those used in routine/non-activation operations involving commercial carriers, some changes come into play during actual CRAF activations.

1.2. Scope. CRAF aircraft specifications listed herein are current as of the date of this printing. Equipment and methods listed are compatible with all CRAF aircraft and cargo areas discussed. **It must be noted that, unlike military cargo aircraft, civilian airframes are not standardized, and can vary widely, even within each carrier's fleet. Final approval, therefore, ultimately rests with the individual contractor providing airlift services to the DOD.**

1.3. Arrangement. This pamphlet series is designed for easy reference and access to the most commonly needed information for planning purposes. Essentially, Volume 1 will contain all information common to the entire CRAF program and most, if not all, carriers. Volumes 2 through 4 contain information specific to a particular manufacturer's airframes, with each sub-volume addendum addressing a different aircraft series or type. Each can be referenced separately from another; however, each addendum must be used in conjunction with Volume 1.

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 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 CRAF carrier 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 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 related contracts, agreements, and programs. USTRANSCOM maintains overall administration of CRAF 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	DSN Contact Number
USTRANSCOM TCAQ-CM	Scott AFB, IL	(312) 770-7077
OL-R TCAQ-CM	Ramstein AB, Germany	(314) 479-4215
OL-T TCAQ-CM	Yokota AB, Japan	(315) 225-8574

1.6.3. Individual CRAF Carrier (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. When cargo is loaded by government personnel, the contractor shall ensure cargo loaded is secure and in accordance with FARs.

1.6.3.2. Load Plan. The contractor shall be responsible for load planning, weight and balance, secure fastening, 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 schedule trip 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 trip 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 and Space Operations Center (Tanker Airlift Control Center) AOC (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 CRAF assets. In addition, AMC's CRAF Cell (HQ AMC/A3B) works to provide long and short-range international section and national segment mission oversight during CRAF activations.

1.6.5. Users of CRAF Airlift Assets. In addition to the roles and responsibilities listed in DTR 4500.9-R it is emphasized that the user **MUST:**

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

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 pamphlet will NOT make you an AMC certified Load Planner, nor is it intended, in any way, to replace AMC's Equipment Preparation and/or Airlift Planners Course. Some basic load planning concepts will be touched upon. The focus of this chapter, however, is to expand on the similarities and the differences of commercial airlift versus military airlift load planning. Sub-topics will be expanded upon in their own chapters.

2.2. Definitions and Meaning.

2.2.1. 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). CRAF carriers must be a U.S. entity or citizen owning U.S. registered aircraft that are certificated under Federal Aviation Administration (FAA) FAR Part 121 rules. These aircraft are allocated by the DOT in accordance with DOD requirements and aircraft capabilities into segments, such as international (long-range, short-range, cargo, and passenger), national, and other segments as mutually agreed upon by the DOD and the DOT.

2.2.2. Long-Range International. The standard long range capability is 3,500NM for both passenger and cargo aircraft while carrying a productive payload. A productive payload is 75% of the aircraft's maximum payload.

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

2.2.4. Meaning for Load Planning. While some, if not most carriers, are a part of the CRAF year in and year out, one cannot necessarily count on any one particular carrier's fleet for a given movement plan. Also, a consideration is that carriers may offer different airframes to the CRAF or even update their fleet since their last usage.

2.2.5. Load Planning Factors. History has proven that the CRAF is a vital part of DOD's airlift capability. However, the safe planning factor to use is 90% of the maximum ACLs listed until the Guaranteed ACL (GACL) for a given movement is known. This can be derived by referencing the carrier's contract GACL.

2.3. Aircraft Safety Considerations. It must be remembered that most civilian aircraft and aircrews will not have defensive/protective equipment. The CRAF Enabling Concept described in AMCI 10-402 allows for CRAF assets to transit Intermediate Staging Bases (ISBs) before going into any particular area of responsibility, area of operations, or theater of operations. Even with additional protective measures and support issued at ISBs, CRAF assets may still NOT be allowed to fly directly to a planned offload location, dependent on the threat level.

2.4. Loading Restrictions. See: Chapter 3 – DIMENSIONAL PLANNING FACTORS

2.5. Center of Balance Considerations. The carrier is responsible for load planning, weight and balance, secure fastening, and any required special handling. The carrier will ensure cargo loaded is secure and in accordance with FARs and individual aircraft CG limits. This applies even when cargo is loaded by government personnel. When an aircraft is overloaded, the carrier shall decide the number of passengers, weight, or articles that shall be carried. The passenger ACL will be reduced with the concurrence of the administrative contracting officer (ACO).

2.6. Ease of Onload/Ease of Offload Considerations. See: Chapter 4 – MATERIAL HANDLING EQUIPMENT (MHE)

2.7. Cargo Categories and Considerations. See: Chapter 5 – ROLLING STOCK / LOOSE CARGO CONSIDERATIONS and: Chapter 6 – PALLETIZED CARGO CONSIDERATIONS

2.7.1. Bulk. General cargo, typically loaded on 463L pallets (108 inches by 88 inches) or containers. CRAF cargo aircraft will at a minimum, arrive at onload site with their main decks prepared for 463L pallets and lower lobes ready for bulk (floor loaded) cargo.

2.7.2. 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.

2.7.3. 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.

2.7.4. Rolling Stock. Equipment that can be driven or rolled directly into the aircraft cargo compartment. Most civilian aircraft will not accept rolling stock. Those that do, will usually want it pre-loaded on a pallet sub-floor. Check individual addenda.

2.7.5. Special. Items requiring specialized planning/preparation and handling procedures, such as mail, satellites, hazardous cargo, or nuclear weapons. Check with individual CRAF carrier representative (CASS) for detailed information regarding special cargo.

2.8. Hazardous Cargo (HAZMAT) Considerations. Airlift of military HAZMAT utilizing contract air carriers during CRAF activation 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. However, if contract airlift is used for other than a national emergency, ensure hazards are prepared IAW 49 CFR 100-199. See AMCI10-402; Section 10M – "DOT Exemptions", for detailed CRAF HAZMAT procedures.

2.9. Passenger Considerations. See Chapter 7 – PASSENGER CONSIDERATIONS.

2.10. 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, they can be used as a guide for CRAF aircraft. NOTE: These are minimum levels of restraint. Individual carriers can require more than this, if deemed necessary.

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
1. If personnel are located in front of cargo, the cargo item(s) must be restrained to 9Gs forward. 2. Primary cargo must be restrained by cargo floor; secondary cargo must be restrained by primary cargo.		

2.11. Commercial Aircraft Ground Times. TACC planners and controllers will ensure commercial contracted cargo mission ground times are be 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.

2.11.1. Station Delay. When a commercial aircraft departs a station in delay, 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. 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. CRAF 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: 1. When a Wide-Body aircraft terminates an active mission and originates to another mission, ground time is 3+30 hours. 2. When establishing schedules, TACC planners and commercial schedulers retain flexibility to determine actual ground times based on particular mission needs.					

Table 2.3. CRAF 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 (large aircraft)	N/A	N/A	3+00	3+00
Mixed	2+00	2+00	2+00	2+00

Notes:
1. When a Wide Body Aircraft terminates an active mission and originates to another mission, ground time is 3+30 hours.
2. When establishing schedules, 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. As previously discussed, civilian airframes vary widely from carrier to carrier and quite often, within a carrier's own 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 in this publication for general planning purposes only. 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 needs to be contoured to fit into a given compartment, so cargo/pallet buildup and placement needs to account for this.

3.1.3. Passenger Compartment Categories. There are primarily three categories that are referred to: passenger, freight, and COMBI. While all three categories can ship both cargo and passengers, the main difference is in how the main deck/passenger compartment is configured. For example, if the main deck is configured in COMBI mode, it means it will hold both cargo and passengers. NOTE: The COMBI mode will have the most variations in configuration.

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 dimensional information presented in these pamphlets has been derived from the manufacturers' factory specifications. While a relatively good basic starting point, all dimensions should be verified, since many civilian airframes have been modified. Door opening dimensions, cargo compartment/lobe height, length, width, and seating are subject to change with each airframe.

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 listed in the AMCPAM 24-2 Series become an issue with the dimensional compatibility of an item of cargo, the loading times listed in Table 2.2 should be questioned.

3.5. Unauthorized Dimension Restrictions. Prior to positioning the aircraft for flight, the carrier shall remove all unauthorized cube restrictions from the cargo compartment. As applicable, aircraft must be equipped with cargo sill guards when on/offloading cargo.

3.6. Permissible Reductions of ACL. Carriers are allowed 3% of available ACL, by weight, for necessary self-support.

3.7. Air Transport Certification Requirement. Just because an item is shipped via CRAF assets, it does NOT exempt it from being certified for air transport with ATTLA if it is 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). 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. Although this allows for a wide variety and can be a catch-all phrase, this chapter focuses mainly on the types that will enable on/offloading of cargo and/or passengers onto CRAF aircraft.

4.2. Responsibilities. The finest movement plans in the world have often been delayed due to lack of proper MHE and poor coordination of GAMSS elements. Although the following describes basic responsibilities for MHE coordination, taking the extra precaution to personally ensure all necessary MHE requests are accomplished will make both on/offloads easier.

4.2.1. AMC. CRAF logistics support during 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 CRAF 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 CRAF Carrier (Contractor).

4.2.3.1. Use of Existing Carrier Assets. To the maximum extent possible, logistics support of CRAF 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 CRAF 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 loaded pallet to 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 CRAF Airlift Assets.

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 CRAF assets whenever possible, unless on/offload locations have GAMSS/civilian aerial port assets to handle the movement:

- Passenger processing, manifesting, and documenting
- Baggage handling (weigh, tag, load and unload)
- Cargo manifesting and on/offloading

4.3. CRAF 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. Even still, some models of MHE may or may not be suitable for use on CRAF assets. See Attachment 2 and Attachment 3 for a guide to assist in planning for MHE needs with particular airframes.

4.4. MHE Characteristics. A detailed description of various MHE types and characteristics can be found in AMCI 10-202V4, CL-1.

4.5. Conclusion. AMC's inventory of MHE is quite large; however, most MHE is dedicated to AMC's fixed or enroute aerial ports for daily operations. If the need arises to reposition MHE to on/offload locations it will be expensive, time consuming, and most likely occupy a tremendous amount of available military airlift cargo space. Therefore, the user of CRAF assets needs to provide as much MHE from local sources as possible. By the same token, it must be remembered to plan and coordinate for the use of MHE at deployed locations. Cargo that cannot be removed and transported from the airplane after it arrives is of little value. 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 upon a palletized or wood-shored subfloor. The air carrier's procedures should address the airplane's floor load limits (area load or linear-running load limits) if the air carrier allows cargo to be loaded directly on the airplane's floor. Wheeled cargo/loose cargo can be loaded directly aboard the aircraft when a subfloor is installed. This subfloor can be either: a 463L pallet (HCU-6/E), a commercial pallet, or other type shoring. Normally, the 463L (HCU-6/E) pallet is used in military airlift operations.

5.1.1. Commercial Pallets. In some cases during CRAF activation, military necessity may require hand loading of passenger baggage on commercial aircraft. Should the need arise contractors shall be required to furnish commercial pallets to be used as a subfloor for their lower decks/lobes. Notification will be provided by the Contracting Officer.

5.1.2. Shoring. Shoring is a material used to distribute a load over a larger area. Thus it is 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 to whatever area is obtained by extending a plane drawn downward and outward, at an angle of 45°, until it intersects the surface on which shoring rests. Both plywood and dimension lumber are commonly used for shoring purposes. Shoring, when used as a subfloor, must consist of wood at least thick enough to support the load distribution, but generally a minimum of ¾ 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 CRAF airlift assets 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 2.7.1) differs from what the FAA defines it as. According to FAA AC 120-85, bulk cargo is generally defined the same as what the military would term loose/floor loaded cargo. This distinction is important in that 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 to include the requirement that the construction of the airplane ensures that unrestrained cargo, when subjected to the flight, ground, and landing forces, cannot damage airplane systems/structure by impact.

5.3.2. Non-bulk Load Compartment. A compartment that protects an airplane's systems and structures by a cargo restraint system. The load restraints will ensure that the cargo structural loads are only applied to the airplane through the load-airplane interface of the cargo restraint system. The cargo restraint system may include barriers, unit load devices (ULDs), nets, straps, chains, tiedowns, and floor locks.

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 (or as far forward as practical) without the need to break down or reassemble it for air transport. It is concerned with both containerized and palletized loads meant to be secured by an aircraft rail and locking system.

6.2. Military 463L Cargo Handling System. 463L is the common designation for a family of air cargo handling equipment. The 463L system consists of separate, but interdependent, equipment families 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. **CRAF aircraft shall be equipped with mechanized roller systems or rail systems that are compatible with 463L configured pallets and equipment.**

6.3. Civilian Cargo Handling System. The theme of this AMC pamphlet is paraphrased here. Civilian cargo handling systems are not standardized and can vary widely, even within each carrier's fleet. However, even though each carrier is given wide latitude on developing a cargo handling system, most will use some form of restraint system designed for ULDs.

6.3.1. Unit Load Device (ULD). A ULD is any type of freight container, aircraft container, or aircraft pallet with a net that is capable of being locked into the aircraft cargo restraint system. A ULD may or may not be certified by government airworthiness authorities.

6.3.1.1. Certified ULD. Considered as a removable aircraft hold, structurally capable of fully restraining the load contained within, and/or providing adequate protection to the aircraft systems and structure.

6.3.1.2. Non-certified ULD. Not considered as a removable aircraft hold, and can only be loaded into aircraft holds that are compartment restraint certified and pursuant to the aircraft's weight and balance manual. For containers, the base plate must be structurally attached to and an integral part of the assembly and the ULD must be capable of fully containing or restraining the cargo or baggage contained within.

6.3.1.3. ULD Types. The two ULD types are pallets and containers. ULD pallets are rugged sheets of aluminum with rims to lock onto cargo net lugs. ULD containers (a.k.a. "cans" or "pods") are closed containers made of aluminum or a combination of aluminum frame and fabric walls/door and may be contoured to fit a specific compartment's profile.

6.4. Meaning for Load Planning. Although the military uses 463L pallets/containers for movements, be aware that most CRAF aircraft pallet capacities listed herein are measured by how many IATA code PAG- / P1P- type LD7s (88 inches × 125 inches) that can be stored. LD7s also inexplicably 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 (not planned) weights will be provided to the contractor.

Chapter 7

PASSENGER CONSIDERATIONS

7.1. Overview. Passenger planning for CRAF airlift assets is, for the most part, much easier than cargo planning. Passengers on CRAF airlift will be planned for and processed much the same as on military airlift, with only the major differences listed below.

7.2. Passenger Weights. The following weights and procedures apply to individuals transported on AMC-chartered commercial aircraft as per 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. No standard body weights will 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.

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 listed in the accompanying volumes for individual airframes are meant for standard planning. A variety of seating configurations are possible, even without modifications to the seat rails. The exact seating number will be given when a particular airframe is assigned.

7.4. Seating Troops. Depending on the status of CRAF airlift (e.g., contract, charter, 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. The troop commander should be prepared, in addition to their normal duties, to assign seats.

7.5. TSA Requirements. On or offload at a civilian airfield may require troops/passengers to follow the guidelines 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. Although users of CRAF airlift must follow the appropriate procedures listed in the publication above, the following is meant to provide additional guidance in shipping individual weapons.

7.6.2.1. Weapons. The weapons talked about are individual, government-issue weapons. Crew-serviced weapons (e.g., M-240, 50 cal) must be transported as baggage or cargo.

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

(1) Stowing inoperable, unloaded firearms with troops in the passenger compartment and shipping ammunition as baggage or cargo; or

(2) Shipping assembled, unloaded, and containerized firearms and ammunition as baggage or cargo. Barring the highly unlikely event of using a CRAF airlift asset to ship troops directly to an area of immediate engagement of enemy forces, there is NO option of having troops in the passenger compartment with their basic combat load.

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 all 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 of the compartment it will be loaded in.

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.

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 type aircraft and which compartment will be used for loading.

7.7.2. Assumptions. All four of these methods assume that normal loading is done by the military at noncommercial fields and that loading teams are readily available. It also assumes that in some instances passengers/troops will help or be the loading teams. When using any vehicle for this purpose, remove the rear and/or side panels prior to the on/offloading the truck at the aircraft and pre-position a chock before backing to prevent vehicle from striking the aircraft fuselage. With any of these methods, prior coordination is essential to a smooth loading operation.

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Director of Operations

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*

Air Force

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 forms or IMT's prescribed by this publication

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

DD Form 2130-5, *DC 10-10/30CF Load Plan*

DD Form 2130-8, *DC 8-50 Series F/CF Load Plan*

DD Form 2130-9, *DC 8-61/71-63/73F/CF Load Plan*

DD Form 2130-10, *DC 8-62CF Load Plan*

DD Form 2130-11, *B707-300C Load Plan*

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

AALPS—Automated Air Load Planning System

AB—Air Base

ABC—Aft Bulk Compartment

ABO—Air Base Operations

ACA—Airlift Clearance Authority

ACA—Airspace Control Authority

AC—Aircraft Commander

ACAS—Air Carrier Analysis Support System

ACC—Air Combat Command

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

ADVON—Advanced Team

AEF—Air and Space Expeditionary Force

AEG—Air Expeditionary Group

AETF—Air and Space Expeditionary Task Force

AEW—Air Expeditionary Wing

AFCAT—Air Force Catalog

AFCC—Air Force Component Commander

AFDD—Air Force Doctrine Document

AFDIR—Air Force Directory

AFH—Air Force Handbook

AFI—Air Force Instruction

AFIND—Air Force Index

AFMAN—Air Force Manual

AFMD—Air Force Mission Directive

AFOSH—Air Force Occupational Safety & Health

AFPAM—Air Force Pamphlet

AFPD—Air Force Policy Directive

AFPM—Air Force Policy Memorandums

AFRC—Air Force Reserve Command

AFRP—Air Force Recurring Periodical

AFSC—Air Force Specialty Code

AFSSI—Air Force Systems Security Instructions

AFSSM—Air Force Systems Security Memorandum

AFTN—Aeronautical Fixed Telecommunications Network

AFWA—Air Force Weather Agency

AGE—Aerospace Ground Equipment

AGL—Above Ground Level

AGW—Allowable Gross Weight

AHA—Alert Holding Area

ALCF—Airlift Control Flight

ALCT—Airlift Control Team

AMC—Air Mobility Command

AMC/CC—Commander, Air Mobility Command

AMCALT—Air Mobility Command Alternate Headquarters

AMCH—AMC Handbook

AMCI—AMC Instruction

AMCMAN—AMC Manual

AMCMD—AMC Mission Directive

AMCOS—Air Mobility Combat Operations Staff

AMCPAM—AMC Pamphlet

AMCPD—AMC Policy Directive

AMCVA—AMC Visual Aid

AMD—Air Mobility Division

AMLO—Air Mobility Liaison Officer

AMOS—Air Mobility Operations Squadron

AMT—Air Mobility Tasking

ANG—Air National Guard

AO—Area of Operations

AOC—Air and Space Operations Center

AOR—Area of Responsibility

APC—Armored Personnel Carrier

APOD—Aerial Port of Debarkation

APOE—Aerial Port of Embarkation

APS—Aerial Port Squadron

ARC—Air Reserve Component

ARCT—Air Refueling Control Team

AS—Airlift Squadron

ASD—Aeronautical Systems Division

ASRR—Airfield Suitability and Restrictions Report

AST—Airfield Survey Team

ATA—Air Transport Association

ATACC—Alternate Tanker Airlift Control Center

AT—Assessment Team

ATC—Air Traffic Control

ATO—Air Tasking Order

ATOC—Air Terminal Operations Center

ATSG—Air Transportation Standards Guide

ATT—Affiliation Training Team

ATTLA—Air Transportability Test Loading Agency

BL—Bill of Lading

BL—Butt Line

C/B—Center of Balance

C2—Command and Control

C2IPS—C2 Information Processing System

C3—Command, Control, and Communications

C4I—Command, Control, Communications, Computers, and Intelligence

C4S—Command, Control, Communications, Computer Systems

CAM—Commercial Airlift Movement

CAMO—Contract Airlift Management Office

CAOC—Combined Air Operations Center

CARB—Commercial Airlift Review Board

CASS—Civil Airlift Support Specialist

CASF—Contingency Aeromedical Staging Facility

CAT—Crisis Action Team

CAT—D—Crisis Action Team Director

CBRNE—Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive

CCATT—Critical Care Air Transport Team

CC—Commander

CCDR—Combatant Commander

CDDOC—Coalition Deployment Distribution Operations Center

CF/F—Convertible Freighter or Freighter

CFACC—Coalition Force Air & Space Component Commander

CFR—Code of Federal Regulations

CG—Center of Gravity

CHOP—Change of Operation Control

CJTF—Commander, Joint Task Force

CL—Center Line

CLL—Center Lower Lobe

CLPT—Contingency Load Planning Team

CLS—Cargo Loading System

CMM—Component Maintenance Manual

COA—Course of Action

COCOM—Combatant Command

COMAFFOR—Commander of Air Force Forces

COMBI—Combination

COMM—Commercial

COMPT—Compartment (same as lobe)

COMSEC—Communications Security

CONEX—Container Express

CONF—Configuration

CONUS—Continental United States

CP—Command Post

CRAF—Civil Reserve Air Fleet

CRC—Control and Reporting Center

CRE—Contingency Response Element

CRG—Contingency Response Group

CRT—Contingency Response Team

CRW—Contingency Response Wing

CST—Contingency Support Team

CU FT—Cubic Feet/Foot (FT3)

D#—Distance One, Two, Three, etc…

DACG—Departure Airfield Control Group

DAMA—Demand Assigned Multiple Access

DCAPES—Deliberate Crisis Action Planning and Execution Segment

DCC—Deployment Control Center

DCS—Defense Courier Service

DDOC—Deployment Distribution Operations Center

DDT—Double Dual Tandem Type Landing Gear (B-747, etc.)

DEL—Deployment Equipment List

DHS—Department of Homeland Security

DIRMOBFOR—Air—Director of Air Mobility Forces

DIST—Distance

DODD—Department of Defense Directive

DOD—Department of Defense

DODI—Department of Defense Instruction

DO—Director of Operations

DOT—Department of Transportation

DOT—SP— Department of Transportation Special Permit

DPA—Defense Production Act

DSN—Defense Switched Network

DSS—Defense Security Service

DSSOCC—Defense Security Service Facility Clearance Office

DTR—Defense Transportation Regulation

DV—Distinguished Visitor

EAS—Expeditionary Airlift Squadron

EMTF—Expeditionary Mobility Task Force

EOD—Explosives Ordinance Disposal

EPC—Equipment Preparation Course

ERO—Engine Running Onload/Offload

ESCAT—Emergency Security Control of Air Traffic

EST—Estimate

ETA—Estimated Time of Arrival

ETB—Estimated Time Aircraft Will be on Blocks

ETD—Estimated Time of Departure

ETIC—Estimated Time in Commission

FAA—Federal Aviation Administration

FARs—Federal Aviation Regulations

FAW—Front Axle Weight

FCG—Foreign Clearance Guide

FEMA—Federal Emergency Management Agency

FFE—Front Forward Edge

FIR—Flight Information Region

FLIP—Flight Information Publication

FLL—Forward Lower Lobe

FM—Field Manual

FOA—Field Operating Agency

FOB—Forward Operating Base

FOH—Front Overhang

FOIA—Freedom of Information Act

FOUO—For Official Use Only

FS—Fuselage Station

FT—Feet/Foot

FT3—Cubic Feet/Foot (CU FT)

FWD—Forward

FY—Fiscal Year

GACL—Guaranteed Allowable Cabin (Or Cargo) Load

GAL—Gallon(s)

GAMSS—Global Air Mobility Support System

GATES—Global Air Transportation Execution System

GCCS—Global Command and Control System

GCCS—J— Global Command and Control System – Joint

GDSS—Global Decision Support System

GFM—Global Freight Management System

GLO—Ground Liaison Officer

GMT—Greenwich Mean Time

GPMRC—Global Patient Movement Requirements Center

GSS—Global Support Squadron

GTN—Global Transportation Network

GW—Gross Weight

GWT—Gross Weight

HA—Humanitarian Assistance

HAZDEC—Hazardous Declaration

HAZMAT—Hazardous Materials

HGT—Height

HN—Host Nation

HQ—Headquarters

HR—Hazard Report

HT—Height

HUMRO—Humanitarian Relief Operation

HW—Hazardous Waste

IATA—International Air Transportation Association

IAW—In Accordance With

IAW—Intermediate Axle Weight

ICAO—International Civil Aviation Organization

ID—Identification Number

IG—Inspector General

IN—Inches

IPL—Illustrated Part List

ISB—Intermediate Staging Base

ISR—Intelligence, Surveillance, & Reconnaissance

ISU—Internal Slingable Unit

ITV—In-Transit Visibility

JAOC—Joint Air Operations Center

JAOP—Joint Air Operations Plan

JCN—Job Control Number

JCS—Joint Chiefs of Staff

JDDOC—Joint Deployment Distribution Operations Center

JFACC—Joint Force Air Component Commander

JFC—Joint Force Commander

JI—Joint Inspection

JMC—Joint Movement Center

JOA—Joint Operation Area

JOSAC—Joint Operational Support Airlift Center

JP—Joint Publication

JRTC—Joint Readiness Training Center

JSCP—Joint Strategic Capabilities Plan

JSPS—Joint Strategic Planning System

JTAV—Joint Total Asset Visibility

JTF—Joint Task Force

JTTP—Joint Tactics, Techniques, and Procedures

K—1000 Pounds

LAT—Lateral

LBL—Left Butt Line

LBS—Pounds

LCN—Load Classification Number

LMSR—Large Medium Speed Roll-On/Roll- Off

LOAC—Law of Armed Conflict

LOGAIS—Logistics Automated Information System

LOGREQ—Logistics Requirements

LONG—Longitude

LOSS—Liquid Oxygen Subsystem

LOX—Liquid Oxygen

LRC—Logistics Readiness Center

MAC—Mean Aerodynamic Chord

MAF—Mobility Air Force

MAJCOM—Major Command

MASF—Mobile Aeromedical Staging Facility

MAX—Maximum

MCC—Movement Control Center

MCD—Medical Crew Director

MEGP—Mission Essential Ground Personnel

MGW—Maximum Gross Weight

MHE—Material Handling Equipment

MLW—Maximum Design Landing Weight

MLW—Maximum Landing Weight

MOA—Memorandum of Agreement

MMHS—Mechanized Material Handling System

MOBREP—Mobilization Representative

MOG—Maximum On Ground

MOM—Moment

MOOTW—Military Operations Other Than War

MOS—Medical Oxygen Subsystem

MOU—Memorandum of Understanding

MRT—Maintenance Recovery Team

MRW—Maximum Design Ramp Weight

MSC—Mission Support Cell

MTOW—Maximum Take Off Weight

MTW—Maximum Design Taxi Weight

MZFW—Maximum Design Zero Fuel Weight

NAF—Numbered Air Force

NCOIC—Noncommissioned Officer in Charge

NCO—Noncommissioned Officer

NEO—Noncombatant Evacuation Operations

NEW—Net Explosive Weight

NGO—Non-Governmental Organization

NMC—Non-Mission Capable

NM—Nautical Mile (Statute Mile x 1.15)

NOTAM—Notices To Airmen

NSN—National Stock Number

O&M—Operations & Maintenance

OCONUS—Outside Continental United States

OEW—Operating Empty Weight

OIC—Officer in Charge

OI—Operating Instruction

OL—Operating Location

OPCON—Operational Control

OPLAN—Operation Plan

OPLIFT—Opportune Lift

OPORD—Operations Order

OPREP—Operations Report

OPR—Office of Primary Responsibility

OPSEC—Operations Security

ORM—Operational Risk Management

OSA—Operational Support Airlift

OSD—Office of the Secretary of Defense

OSHA—Occupational Safety & Health Administration/Act

PAX—Passenger(s)

PDO—Publications Distribution Office

PERSCO—Personnel Support for Contingency Operations

PID—Plan Identification

PIN—Personnel Increment Number

PLF—Pounds per Linear Foot

PLI—Pounds per Linear Inch

PLS—Patient Loading System

PMEL—Precision Measurement Equipment Laboratory

PMI—Preventive Maintenance Inspection

PMRC—Patient Movement Requirement Center

PMR—Patient Movement Requirement

POC—Point of Contact

POD—Port of Debarkation

POE—Port of Embarkation

POL—Petroleum, Oils, & Lubricants

POP—Performance Oriented Packaging

PP—Pallet Position

PPM—Pounds per Minute

PR—Phoenix Raven

PSF—Pounds per Square Foot

PSI—Pounds per Square Inch

PSP—Patient Support Pallet

PWR—Prepositional War Reserve

QA—Quality Assurance

QAR—Quality Assurance Representative

RAMCC—Regional Air Movement Control Center

RAW—Rear Axle Weight

RBL—Right Butt Line

RDD—Required Delivery Date

RDL—Reference Datum Line

RFID—Radio Frequency Identification

RF—ITV—Regional- In-Transit Visibility

RL—Reference Line

RO/RO—Roll On/Roll Off

ROH—Rear Overhang

RSP—Readiness Spares Package

RWY—Runway

SAA—Senior Airfield Authority

SAR—Search & Rescue

SBI—Special Background Investigation

SBTT—Single-Belly Twin Tandem Landing Gear (DC-10, KC-10, etc.)

SDDC—Surface Deployment & Distribution Command

SDDCTEA—Surface Deployment & Distribution Command Transportation Engineering Agency

SECAF—Secretary of the Air Force

SECDEF—Secretary of Defense

SECSTATE—Secretary of State

SECTRANS—Secretary of Transportation

SF—Security Forces

SID—Standard Instrument Departures

SL—Sea Level

SOFA—Status of Forces Agreements

SORTS—Status of Resources & Training System

SPIN—Special Instruction

SPR—Single Point Refueling

STD DAY—Standard Day (15°C/59°F)

STE—Secure Telephone Equipment

STN—Station

ST or STON—Short Ton (2,000 lbs.)

T/O—Takeoff

TACC—Tanker Airlift Control Center

TACON—Tactical Control

TACP—Tactical Air Control Party

TA—Transportation Agent

TALCE—Tanker-Airlift Control Element (obsolete term, but still used. See: CRE)

TC—AIMS II—Transportation Coordinator's Automated Info for Movement Systems II

TCCC—Commander, US Transportation Command

TCMD—Transportation Control & Movement Document

TCN—Transportation Control Number

TCU—Transportation Control Unit

TDY—Temporary Duty

TMO—Traffic Management Office

TO—Technical Order

TPFDD—Time-Phased Force Deployment Data

TR—Transportation Request (as appropriate)

TSA—Transportation Security Administration

TSO—Technical Standards Order

TTP—Tactics, Techniques, & Procedures

TT—Twin Tandem (DC-8, B757, B767, etc.)

TWCF—Transportation Working Capital Fund

UCMJ—Uniform Code of Military Justice

UDL—Unit Deployment List

UIC—Unit Identification Code

ULD—Unit Load Device

ULN—Unit Line Number

ULS—Universal Loading Simulators

USAF—United States Air Force

USC—United States Code

USTRANSCOM—United States Transportation Command

UTC—Unit Type Code

UTE—Utilization

W#—Weight One, Two, Three, etc…

WBEL—Wide Body Elevator Loader

WBE—Wide Body Equivalent

WB—Wheel Base

WDT—Width

WL—Water Line

WOC—Wing Operations Center

WRM—War Readiness Materiel

WRSK—War Readiness Spares Kit

WT—Weight

ZFW—Zero Fuel Weight

Attachment 2

MHE REFERENCE CHARTS. USE REPRESENTATIVE DATA IN THIS ATTACHMENT TO COMPARE MHE COMPATIBILITY WITH DOOR HEIGHTS FOR THE VARIOUS CRAF AIRFRAMES REFERENCED IN ATTACHMENT 3.

Table A2.1. Forklifts.

FORKLIFTS (Note: Forklifts come in a wide variety. Table values are representative only.)							
MHE Type	Lifting Capacity (lbs.)	Load Center	463L Pallet Capacity	Tine Length	Lift Height (varies w/model)		Typical Manufacturers
					Min	Max	
4K (Note 1)	4,000	24"	None	30"-60"	0"	104.5"-167.5"	Hyster, Yale, Drexel, Allis-Chalmers
6K (Note 2)	6,000	24"	1 (Note 7)	40"	0"	187"	Hyster, Clark, Allis-Chalmers
10K Standard (Note 3)	10,000	48"	1	X	0"	150"	Hyster, J I Case, Wiggins, Allis-Chalmers
10K AT (Note 4,6)	10,000	48"	1	72"	0"	80"	Liftking, J I Case
13K AT (Note 5,6)	13,000	48"	1	72"	0"	79.5"	Liftking, Clark
Note 1: Representative data taken from TO #36M2-2-189-1, model #J40XL. Note 2: Representative data taken from TO #36M2-2-192-1, model #E60XL. Note 3: Representative data taken from TO #36M2-2-107-21, model #H1OOC-AF-48. Note 4: Representative data taken from TO #36M2-2-235-1, model #LKAF10. Note 5: Representative data taken from TO #36M2-2-256-1, model #LKAF13-03.							

Table A2.2. Loaders.

LOADERS							
MHE Type	Lifting Capacity (lbs.)	463L Pallet Capacity	Lift Height		Platform Dimensions		Typical Manufacturers
			Min	Max	Length	Width	
25K (Note 1)	25,000	3	37.5"	156"	336"	128"	Emerson Electric, DRS

Halvorsen NGSL (Note 2)	25,000	3	39"	225"	355" (Note 5)	170" (Note 5)	JBT AeroTech
40K (Note 3)	40,000	5	41"	156"	497" (Note 5)	122"	SPACE Corp.
Tunner (Note 4)	60,000	6	43"	222"	592" (Note 5)	150"	DRS
Air Cargo Loader	40,000	~3	20"	216"	324" (Note 5)	151" (Note 5)	Transact Intl
Note 1: Representative data taken from TO #36M2-3-20-21, model #A/S 32H-5A.							
Note 2: Representative data taken from TO #36M2-3-45-1, model #P/N 623-4300.							
Note 3: Representative data taken from TO #36M2-3-21-11, model #A/S 32H-6 & -6A.							
Note 4: Representative data taken from TO #36M2-3-35-11, model #A/S 32H-23.							

Table A2.3. Air Stairs.

AIR STAIRS						
MHE Type	Platform Capacity (lbs.)	Step Capacity (lb.)	Lift Height		Chassis	Typical Manufacturers
			Min	Max		
SPS-2513 (Note 1)	1,000	250	84"	148"	Ford F-350	Stinar
SPS-3518 (Note 2)	1,000	250	96"	228"	Ford F-350	Stinar
A/S 32S-3 (Note 3)	1,000		95"	152"	Ford F-250	SPACE Corp
AS228	1,000	250	96"	228"	Ford F-450	Lift-A-Loft
B-1 Maint. Platform	500 (Note 4)		36"	120" (Note 5)	N/A	
Note 1: Representative data taken from TO #35A3-21-1, model # SPS-2513.						
Note 2: Representative data taken from TO #35A3-22-1, model # SPS-3518.						
Note 3: Representative data taken from TO #35A3-11-1, model # 1500, 1500A.						
Note 4: This is the total weight capacity that can be on the entire maintenance stand at one time.						
Note 5: Recommended to always face stairs and hold railing when going up or down due to potential instability.						

Attachment 3

CRAF DOOR HEIGHTS

Aircraft Type	Door Ht from ground (in inches)				
	Front/ Side Pax	Main/ Upper Deck	Lower Lobe FWD	Lower Lobe AFT	Bulk Lobe
A300-B4	176.7–188.2	X	99.7–107.5	118.2–122	118.2–126
A300-C4	176.7–188.2	173.6–179.6	99.7–107.5	118.2–122	118.2–126
A300-600	173.5–180.2	X	98.2–104.5	117.2–125.2	119.5–128.2
A300C4-600/ F4-600	173.5–180.2	172.1–176.4	98.2–104.5	117.2–125.2	119.5–128.2
A300-600R	173.5–180.2	X	98.2–104.5	117.2–125.2	119.5–128.2
A310-200	174–178.6	X	98.5–102.8	102–107	102.5–108.4
A310 C&F	174–178.6	177.4–181.4	98.5–102.8	102–107	102.5–108.4
A310-300	173.9–179.0	X	98.4–103.3	100.4–106.3	100.2–106.9
A-318	133.2–135.6	X	79.2–81.6	86.4–91.2	X
A319-100	133.1–136	X	79–82.2	82.2–88.7	X
A320-200	133.4–137	X	79.1–82.3	81.8–88.6	90.6–98.9
A321-200	134.4–139.2	X	79.2–82.8	80.4–88.8	88.8–98.4
A330-200	174.7–182.3	X	101.5–109.4	124.3–137.8	129.8–144.1
A330-200F	189.7–196.8	191.8–198.5	115.3–122.4	119.6–138.6	122.9–142.1
A330-300	173.5–179.0	X	100.3–106.2	123.2–135.0	132.0–144.8
A340-200	173.2–183.4	X	100.0–109.8	125.2–135.7	130.3–141.2
A340-300	175.1–183.0	X	100.0–109.4	125.2–135.7	130.3–141.6
A340-500	177.8–187.3	X	104.2–113.3	129.5–139.1	133.1–143.0
A340-600	178.6–188.0	X	104.3–113.5	127.9–137.9	131.0–141.5
B727-100C	98–116	102–114	51–64	51–65	X
B727-200	96–121	X	50–66	46–65	47–72
B727-200F	X	108	X	X	X
B737-200	97–103	X	46–51	57	X
B737-200C	97–103	97–103	46–52	57	X
B737-300/400/500	103–109	X	50–55	54	X
B737-400C/F	103–109	X	50–55	54	X
B737-600/700/ 700C/800/900/900ER	102–108	X	51–57	64–70	X
B747-100/200B/300	183–211	X	104–128	106–124	114–136
B747-100SF	183–211		104–128	106–124	114–136
B747-200B Combi /200C/200F/300 Combi	183–211	184–210	102–128	106–125	114–139
B747-400	186–203	X	106–122	111–125	118–134
B747-400 Combi	186–203	192–207	106–122	111–125	118–134
B747-400F	186–204	192–207	106–123	109–126	117–135

Aircraft Type	Door Ht from ground (in inches)				
	Front/ Side Pax	Main/ Upper Deck	Lower Lobe FWD	Lower Lobe AFT	Bulk Lobe
B747-400ER	187–205	X	106–123	114–127	122–137
B747-400ERF	187–212	195–209	108–129	114–127	122–136
B747-8F	188–212	192–207	109–130	109–129	115–136
B757-200	149–158	X	97–105	93–99	102–109
B757-200PF	149–158	150–158	97–105	93–99	X
B757-300	149–158	X	97–105	90–94	X
B767-200/200ER	161–176	X	89–99	89–99	90–102
B767-200SF		177	89–99	89–99	90–102
B767-300/300ER	163–177	X	90–101	86–99	87–102
B767-300F	162–177	164–176	89–101	89–100	89–103
B767-400ER	163–173	X	94–103	116–126	121–131
B777-200	185–197	X	111–120	127–134	127–134
B777-200ER/HGW	185–197	X	111–120	127–134	127–137
B777-200LR	185–199	X	110–122	126–141	134–142
B777-300	185–197	X	111–120	127–134	127–137
B777-300ER	189–202	X	113–126	126–141	131–148
B777F	183–202	131–140	113–126	126–141	131–148
DC8-61F	126.4–133.3	127.8–134.7	74.7–83.4	85.6–97.2	X
DC8-62F	125.7–132.7	127.9–134.6	75.8–82.3	84.8–95.4	X
DC8-63F	125.8–134.3	127.6–135.7	74.4–83.3	86–93.5	X
DC8-71F	126.4–133.3	127.8–134.7	74.7–83.4	85.6–97.2	X
DC8-72F	125.7–132.7	127.9–134.6	75.8–82.3	84.8–95.4	X
DC8-73F	125.8–134.3	127.6–135.7	74.4–83.3	86 –66.5	X
DC10-10	186–199	X	108–116	104–113	109–119
DC10-10F	186–199	187–204	108–116	104–113	109–119
DC10-30	189–203	X	109–119	105–115	109–120 or 120–133
DC10-30F	189–203	186–196	109–119	105–115	109–120 or 120–133
MD-11	X	X	110–123	106–117	123–136
MD-11F	188–205	188–205	110–123	106–117	123–136
MD-82/83/88	87–94	X	43–51	48–56	57–65
MD-87	87–93	X	44–49	50–55	58–65
MD90-30	88–96	X	46–53	51–56	59–65

Note: X = Non-Applicable. Additionally, information on each airframe type/series derived according to each aircraft's manufacturer. Data shall be used for planning purposes only. Please refer to specific airframe manuals to ensure accurate data.

Attachment 4

PROPOSED NAMING CONVENTION WITH HISTORICAL FAA, U.S. AIR FORCE, AND U.S. NAVY NOMENCLATURES

		Historic FAA Designations					U.S. Air Force Designations				U.S. NAVY Designations			
PROPOSED NOMENCLATURE	Reference Figure	FAA Name	Main Gear	Belly Gear	# Belly Gear	Total # Wheels, Excluding Nose	Air Force Designation	Air Force Types	Air Force Name	NOSE GEAR	Navy Name	Navy Designation	DOD Flight Information	Typical Aircraft
S	3	Single Wheel	SW			2	S	A	Single, Tricycle	Single Wheel	Single Tricycle	ST	S	F-14, F15
S	4	Single Wheel	SW			2	S	B	Single, Tricycle	Dual wheel				
D	5	Dual wheel	DW			4	T	C	Twin, Tricycle	Single Wheel				Beech 1900
D	6	Dual wheel	DW			4	T	D	Twin, Tricycle	Dual wheel	Dual Tricycle	DT	T	B-737, P3 (C-9)
2S	7	Single Tandem				4	S-TA	E	Single, Tandem Tricycle	Dual wheel	Single Tandem Tricycle	STT	ST	C-130
2T	8					12	TR-TA	L	Twin-Tandem, Tricycle	Dual wheel	Triple Tandem	TRT	TRT	C-17
2D	9	Dual Tandem	DT			8	T-TA	F	Twin-Tandem, Tricycle	Dual wheel	Dual Tandem Tricycle	DTT	TT	B757, KC135, C141
2D/D1	10	Dual tandem	DT	DW	1	10	T-TA	H	Twin-Tandem, Tricycle	Dual wheel	Single Belly Twin Tandem	SBTT	SBTT	L1011, DC-10
2D/2D1	11	Dual Tandem	DT	DT	1	12				Dual wheel				A340-600
2D/2D2	12	Double Dual Tandem	DT	DT	2	16	T-TA	J	Twin-Tandem, Tricycle	Dual wheel	Double Dual Tandem	DDT	DDT	B-747, (E-4)
3D	13	Triple dual Tandem	TDT			12				Dual wheel				B-777
5D	14					20				4 across				An-124
7D	15					28				4 across				An-225
2D/3D2	16		DT	TDT	2	20				Dual wheel				A380
C5	17					24	T-D-TA	K	Twin-Delta-Tandem, Tricycle	4 across	Twin Delta Tandem	TDT	TDT	C-5
D2	18					8	T-T	G	Twin-Twin, Bicycle	No Nose Gear - single outrigger	Twin Twin Tricycle	TT	TT	B-52
Q	19					8								HS-121 Trident
Q2	20					16								IL-76

Note: A standard naming convention allows uniformity and consistency among federal agencies and external entities when naming aircraft gear configurations. Attachment 4 provides examples of known gear configurations.

Attachment 5

TCCC LETTER ON USE OF ACTUAL WEIGHTS

UNITED STATES TRANSPORTATION COMMAND
508 SCOTT DRIVE
SCOTT AIR FORCE BASE, ILLINOIS 62225-5357

1 March 2010

MEMORANDUM FOR SEE DISTRIBUTION LIST

FROM: TCCC

SUBJECT: DOD Contract Flight Safety

1. A serious potential safety issue has surfaced regarding the transportation of our Soldiers, Sailors, Marines, Airmen, and Coast Guardsmen from active, guard, and reserve units on DOD contract commercial aircraft. Our Civil Reserve Air Fleet (CRAF) partners have reported several cases in the past few months in which passenger and baggage weights used to calculate the aircraft's weight and balance have been off by as much as 20,000 lbs. Another note of concern is the improper documentation of hazardous materials and weapons handling/storage inside aircraft cabins. We have notified the commercial carriers to remain vigilant and have given them the authority to challenge suspect passenger and baggage weights, improper hazardous material documentation, and weapons handling/storage in aircraft cabins at the point of embarkation, even if the result means delaying the mission.

2. DOD personnel and baggage weights are typically heavier than standard weights for the traveling public. As such, DOD guidance in the Defense Travel Regulation requires actual weights for personnel and cargo for all DOD commercial charter flights. The DOD mandated this requirement as a result of the fatal DC-8 Arrow Air Flight 1285 in 1985. Weight and balance calculations were inaccurate and cited as a primary contributing factor.

3. While my staff continues to work with your staffs to convey accurate and timely guidance, my top priority is the safe and expeditious transportation of our Nation's all-volunteer Armed Forces around the globe. Proper weight and balance documentation, hazardous material reporting, and weapons handling ensure we get our warriors safely to and from the fight. Thanks for your continued support in disseminating this critical guidance.

V/R

DUNCAN J. McNABB
General, USAF
Commander

Attachment:
Distribution List

Attachment 6

AMCPAM 24-2 SERIES OLD VS. NEW COMPARISON

	AMC PAMPHLET 24-2 SERIES OLD VS. NEW NUMBERING SYSTEM		
Models	**OLD**	**NEW**	**Models**
	VOL 1: CIVIL RESERVE AIR FLEET LOAD PLANNING GUIDE (2001)	Vol 1 CIVIL RESERVE AIR FLEET LOAD PLANNING	
		Vol 2 AIRBUS Add A – A 300 SERIES	A300-B4
			A300-C4
			A300-600
			A300C4-600
			A300F4-600
			A300-600R
	VOL 9 : AIRBUS A310 (2001)	Vol 2 AIRBUS Add B – A 310 SERIES	A310-200
			A310 C&F
			A310-300
		Vol 2 AIRBUS Add C – A 320 SERIES	A318
			A319-100
			A320-200
			A321-200
A330-200	VOL 14: AIRBUS A330 -200 & -300 (2006)	Vol 2 AIRBUS Add D – A 330 SERIES	A330-200
			A330-200F
A330-300			A330-300
		Vol 2 AIRBUS Add E – A 340 SERIES	A340-200
			A340-300
			A340-500
			A340-600
		Vol 2 AIRBUS Add E – A 350 SERIES Reserved for future use	
		Vol 2 AIRBUS Add E – A 380 SERIES Reserved for future use	
B727-100	VOL 17: BOEING B-727 (2006)	Vol 3 BOEING Add A – B 727 SERIES	B727-100C

	AMC PAMPHLET 24-2 SERIES OLD VS. NEW NUMBERING SYSTEM		
Models	**OLD**	**NEW**	**Models**
B727-100C			
B727-200			B727-200
B727-200F			B727-200F
	VOL 18: MCDONNELL BOEING 737 (2006)	Vol 3 BOEING Add B – B 737 SERIES	B737-200
			B737-200C
			B737-300
			B737-400
			B737-400 C/F
			B737-500
			B737-700
			B737-700C
			B737-800
			B737-900
			B737-900ER
B747-100B	VOL 2: BOEING 747 (2001)	Vol 3 BOEING Add C – B 747 SERIES	B747-100
B747-100F			B747-100SF
B747-200B			B747-200B
B747-200F			B747-200B Combi
B747-300F			B747-200C
B747-400B			B747-200F
B747-400F			B747-300
			B747-300 Combi
			B747-400
			B747-400 Combi
			B747-400F
			B747-400ER
			B747-400ERF
			B747-8F
B757-200	VOL 10: BOEING 757 (2001)	Vol 3 BOEING Add D – B 757 SERIES	B757-200
B757-200F			B757-200PF
			B757-300
B767-200	VOL 6: BOEING 767 (2001)	Vol 3 BOEING Add E – B 767 SERIES	B767-200
B767-200ER			B767-200ER
			B767-200SF

	AMC PAMPHLET 24-2 SERIES OLD VS. NEW NUMBERING SYSTEM		
Models	**OLD**	**NEW**	**Models**
B767-300			B767-300
			B767-300ER
B767-300ER			B767-300F
			B767-400ER
B777-200	VOL 7: BOEING 777 (2001)	Vol 3 BOEING Add F – B 777 SERIES	B777-200
			B777-200ER/HGW
B777-200ER			B777-200LR
			B777-300
B777-300			B777-300ER
			B777F
		Vol 3 BOEING Add F – B 787 SERIES Reserved for future use	
DC8-50F	VOL 5: MCDONNELL DOUGLAS DC-8 (2001)	Vol 4 BOEING (McDonnell Douglas) Add A – DC 8 SERIES	
DC8-61F			DC8-61F
DC8-62F/CF			DC8-62F
DC8-63F			DC8-63F
DC8-71F			DC8-71F
DC8-72F			DC8-72F
DC8-73F			DC8-73F
DC10-10	VOL 3: MCDONNELL DOUGLAS DC-10 (2001)	Vol 4 BOEING (McDonnell Douglas) Add B – DC 10 SERIES	DC10-10
DC1010CF			DC10-10F
DC10-30			DC10-30
DC10-10F			DC10-30F
DC10-40			
DC10-30F			
	VOL 8 : MCDONNELL DOUGLAS MD 11 (2001)	Vol 4 BOEING (McDonnell Douglas) Add C – MD 11 SERIES	MD-11
			MD-11F
MD-82	VOL 16: MCDONNELL DOUGLAS MD-80 (2006)	Vol 4 BOEING (McDonnell Douglas) Add D – MD 80 SERIES	MD-82
MD-83			MD-83
MD-87			MD-87
MD-88			MD-88
		Vol 4 BOEING (McDonnell Douglas)	MD-90-30

	AMC PAMPHLET 24-2 SERIES OLD VS. NEW NUMBERING SYSTEM		
Models	**OLD**	**NEW**	**Models**
		Add E – MD 90 SERIES	
L1011-1	VOL 4: LOCKHEED L-1011 (2001)	(*Not Discussed. L-1011 retired from all domestic carriers.)	
L1011-100			
L1011-200			
L1011-200F			
L1011-500			
		Vol 5 MISCELLANEOUS AIRCRAFT Reserved for future use	