

Federal Aviation Administration

Cargo Focus Team And Air Cargo Operations

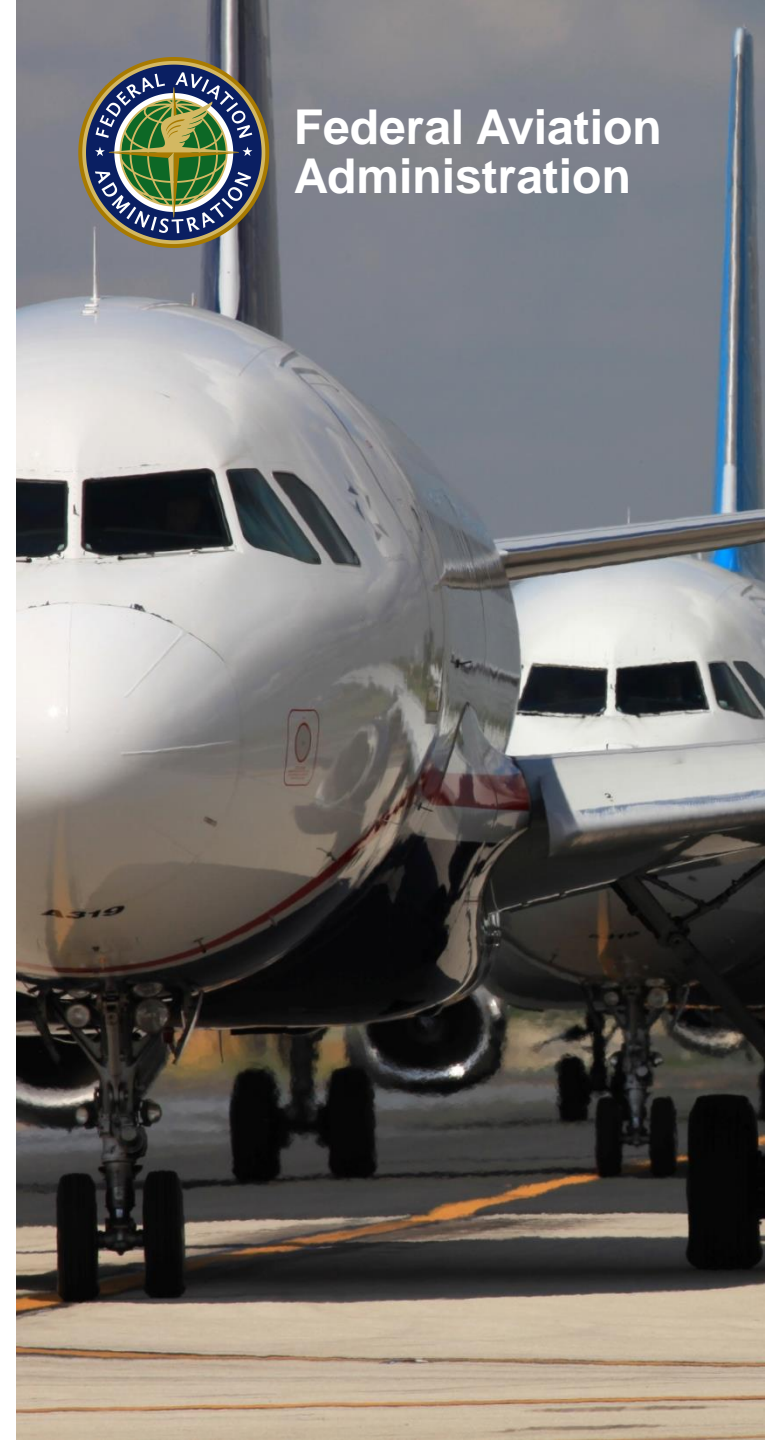
Presented to: EMI FSDO Operators

By: AFS-330

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Federal Aviation
Administration



Overview

- ❑ **Background**
- ❑ **Cargo Focus Team**
 - NTSB
 - Working with Stakeholders
 - Short and Long Term Goals
 - Accomplishments
 - AC 120-85A Highlights
- ❑ **Cargo Operations**
- ❑ **Changes to the AFM/WBM**
- ❑ **Current Issues and Initiatives**



Background

Cargo Aircraft Accident likelihood

- ❑ 20 times more likely than a passenger aircraft (according to IATA data)
- ❑ FAA CAST team is currently showing 30 to 50

Background

- ❑ Following the Air Cargo accident in Afghanistan, a team was assembled to determine whether or not systemic problems exist regarding special cargo loads
- ❑ Aircraft Certification (AIR) and Flight Standards (AFS) are working jointly to address Cargo Operation with a focus on “Special Cargo”

Cargo Focus Team

- ❑ The FAA, Cargo Focus Team (CFT) exists as a permanent technical resource for cargo operations
- ❑ For cargo operations questions or suggestions contact CFT @ 9-NATL-Cargo-CFT@faa.gov



Cargo Focus Team

Team Structure

Interdependency

Multi Discipline

- Transport Airplane Directorate (ANM-100)
- Air Transport Operations (AFS-200)
- Aircraft Maintenance Division (AFS-300)
- National Field Office (AFS-900)
- Field Inspector (CMO- Detailees)

Cargo Focus Team

- ❑ **The CFT Vision** is to *enhance the safety of air cargo operations.*

- ❑ **The CFT Mission** is to *directly support FAA field personnel, act as a focal point for the integrity of air cargo operations while serving as the FAA's technical matter expert in air cargo operations*

NTSB

- ❑ NTSB final report on from B-747 accident published July 29, 2015.
- ❑ Three of the NTSB Safety recommendations from Fine Air accident (1998) mirror the six Safety recommendations based on National Air accident (2015).

NTSB

□ Fine Air issues linger...

- Problems with Operator Manuals
 - Ensure cargo loading procedures are based on manufacturer's data applicable to the airplane being operated
- Lack of FAA Oversight
 - Positively verify that all loading steps have been accomplished for each loaded position on the airplane and that the condition, weight, and sequencing of each pallet is correct.
- Gaps in FAA/Operator training
 - Training for cargo handling (initial and recurrent)
 - Use of Multiple entities (Outsourcing) and Freight Forwarders

NTSB Recommendations - AFG

- ❑ **A-15-13** Revise the guidance material in Advisory Circular (AC) 120-85, “Air Cargo Operations,” chapter 201(a)(4), to specify that an operator should seek Federal Aviation Administration (FAA)-approved data for any planned method for restraining a special cargo load for which approved procedures do not already exist, and remove the language in the AC that states that procedures other than those based on FAA-approved data can be used.
- ❑ **A-15-14** Create a certification for personnel responsible for the loading, restraint, and documentation of special cargo loads on transport-category airplanes, and ensure that the certification includes procedures; training; and duty hour limitations and rest requirements consistent with other safety-sensitive, certificated positions.

NTSB Recommendations - AFG

- ❑ **A-15-15** Add a special emphasis item for inspectors of 14 *Code of Federal Regulations* Part 121 cargo operators to **review their manuals to ensure that the procedures, documents, and support in the areas of** cargo loading, cargo restraint, and methods for securing cargo on transport-category airplanes are based on relevant FAA-approved data, with particular emphasis on restraint procedures for special cargo that is unable to be loaded via unit loading devices or bulk compartments.
- ❑ **A-15-16** **Include specific guidance** in the Federal Aviation Administration inspector handbook that **defines responsibilities for principal inspectors for the oversight** of an operator's loading, restraint, and documentation of special cargo loads.

NTSB Recommendations - AFG

- ❑ **A-15-17** Provide **initial and recurrent training for all principal inspectors who have oversight responsibilities** for air carrier cargo handling operations that specifically addresses operator cargo procedures, documents, restraint, and support for technical decisions related to special cargo loads.
- ❑ **A-15-18** **Implement temporary risk-reduction methods any time that required surveillance items** for 14 *Code of Federal Regulations* Part 121 and 135 operators **are deferred**, and establish appropriate limitations on surveillance deferrals.

Unified efforts with Stakeholders

□ Boeing

- Weight and Balance Workshop
- Providing solutions to certain industry needs on certain B747, 767, and 777F airplanes
 - Clarifying seat track allowables to include prohibitions
Intermodal container prohibition
 - Straps/pallet as approved combination
 - Vehicles on pallet

InFO 13012

InFO 15010

** Boeing Supplement
D636H000-NASCLCr02*

□ Department of Defense (DoD)

- Contracting, Air Transportability Test Loading Agency (ATTLA), and Loadmaster workshop

□ Trade Associations

- National Air Carrier Association (NACA)
- International Air Transport Association (IATA)

Short Term Goals

- Weight And Balance Control Program (WBCP) reviews - Cargo
- OpSpec Proposal
 - Cargo Load and Control
- Inspector training
- Human Factors Study
- Outreach

Cargo Carrying Operations							
Air Carrier	ICAO ID	RMP	Airframe	Due To CFT	Number of carriers	Region	Region Taskings
November 2014					3		
Northern Air	NACA	X				Alaskan	AAL: 2
Tatonduk	FXGA	X				Alaskan	AWP: 1
Outfitters LTD							
Aeko Kula	TSAA	X				Western Pacific	
Boeing 747					January 2015	2	
Atlas	UIEA					Eastern	AEA: 1
Kalitta	KCSA					Great Lakes	AGL: 1
National (7-2014)	U2RA						
Boeing 747					May 2015	3	
Polar	P5CA					Eastern	ACE: 1
UPS	IPXA	X				Central	AEA: 2
Sky Lease	WRNA	X				Eastern	
Boeing 757					Sep 2015	2	
ATI*	IXXA	X				South West	ACE: 1
FedEx	FDEA	X				Central	ASW: 1
National	U2RA	X					
UPS	IPXA	X					
Boeing 767					Sep 2015	2	
ABX	ABXA					Great Lakes	AEA: 1
ATI	IXXA	X					AGL: 1
AmeriJet	PCSA					Southern	ASO: 1
Atlas	UIEA						
Dynamic Airways	2DYA	X	On hold until	Mar 2016		Eastern	
			L382	Oct 2015	1		
Lynden	LR7A					Alaskan	AAL: 1
Boeing 767					Jan 2016	1	
FedEx	FDEA	X					ASO: 1
Florida West	FWTA	X				Southern	
UPS	IPXA	X					
Airbus 300						0	
MD-10							
SAAB-340					Jan 2016	1	
Peninsula	PNSA	X				Alaskan	AAL: 1
Boeing 737					Jan 2016	5	
Aeko Kula	TSAA						AGL: 3
Northern Air	NACA	X					ANM: 1
MN Airlines	SCNA					Great Lakes	ASO: 1

Long Term Goals

- WBCP Reviews – Passenger**
- Feasibility of a Loadmaster Certification**
- Evaluate Cargo Systems Program Manager**
- Evaluate Training**
 - Certificate Holder for load supervisors
 - Certificate Management Team
- Evaluation of load manifest rule**
- Evaluating cargo operations guidance for Parts 91, 125 and 135 operations**

Accomplishments

❑ Updated guidance published June 26, 2015

- Advisory Circular (AC) 120-85A, Air Cargo Operations
- Order 8900.1, Inspector Handbook
- SAS Data Collection Tools

❑ Heightened Oversight

- CFT review of Weight and Balance Control Programs

❑ Issued guidance

- Information For Operators and Safety Alerts for Operators
- Continued Airworthiness Notification to the International Community (CANIC) for intermodal containers
- Airworthiness Directive for Intermodal Containers
- Notice for making changes to AFM/WBM (N8900.317)

Current Initiatives

- ❑ Working with TAD for TC/STC/DER resolutions
- ❑ Seat ARAC for loadmaster certification discussion
- ❑ Address safety findings discovered during reviews
 - STC adequacy (Car Pallet)(courier)
 - Coupled pallets (military practice)
 - SAFO for D6 hook

AC 120-85A Highlights

- ❑ The Airline uses the **airplane AFM** as the **basis for the Airline's WBM** that is contained within the Airline's weight and balance program
- ❑ Airlines load cargo IAW the Airlines WBM
- ❑ Removed the allowance for accepted data
 - Examples include IATA, MILSPEC, and SAE
 - Only FAA approved (TC/STC WBM supplement)
- ❑ Preparing Cargo
 - Cargo build up is in IAW with Airline WBM
- ❑ Cargo Weights must be actual and accurate
 - Ensuring calibration of scales is a control to validate the accuracy of the weigh scale.

AC 120-85A Highlights

Staging/Storing Cargo

- Have an acceptance check & revalidation of documents

Transport of Special Cargo

- Procedures For Planning A Special Cargo Transport
- Evaluate Cargo, Determine Restraint, Load Schematic Record Retention (with Load manifest)

Closed loop continuing analysis, evaluation and surveillance system

- To ensure the performance and effectiveness of its weight and balance control program
- Include areas such as: cargo build up, staging, freight forwarding, and transport of special cargo

Use of Multiple Entities in the movement of cargo may be military or foreign employees

AC 120-85A Highlights

☐ ULDs

- ULDs defined by TSO C90/NAS3610/AS36100

☐ Restraints

- Definitions
 - Primary: restraint of the cargo to the aircraft structure for regulatory (e.g. flight and emergency landing) load conditions
 - Supplemental: additional restraint that prevents shifting and is used to stabilize cargo to a pallet or container.
- Explain primary and supplemental restraint and when it is appropriate to use.

AC 120-85A Highlights

❑ Differences between new definitions :

- Cargo requiring special handling procedures
 - May require emphasis in additional procedures, as determined by the operator, to protect cargo or the aircraft during handling acceptance, loading, or in flight.
- Special Cargo
 - Not contained in a ULD certified for the airplane CLS or enclosed in a cargo compartment certified for bulk loading is special cargo. This type of cargo requires special handling and securing/restraining procedures.

❑ Responsibility: the operator is always ultimately responsible for cargo loading/securing and safety of flight

o. **Cargo Requiring Special Handling Procedures.** Some cargo may require additional or unique procedures to protect cargo or the aircraft during handling acceptance or loading, or in flight. Examples of special handling procedures include ceremony or instructions for transporting human remains, feeding live animals in transit, signature service forms for tracking mail/cargo, compatibility with hazmat, protective gear when handling cryogenics, etc. This cargo could also be classified as special cargo (see Section 2.8 and Appendix 10 for additional information). The operator's procedures should address cargo loads requiring special handling. Based on procedures approved for the aircraft manufacturer, STC holder, or procedures developed by other persons and that is FAA approved/accepted, the operator should establish procedures for cargo requiring unique or special handling, which may include the following:

Par 2.6.3

Page 29

DATE

AC 120-85A

- (1) Offset cargo;
- (2) Overweight cargo;
- (3) Overhanging cargo;
- (4) Outsized cargo;
- (5) Sharp or piercing cargo;
- (6) Crated heavy machinery;
- (7) Reels or spools;
- (8) Motor vehicles and other wheeled cargo;
- (9) Tall cargo;

Cargo Operations Overview

- WBCP Reviews and Findings
- Regulatory path
- Types of Cargo
- TSO Tags
- Pallet ID
- Hazmat Notification
- Military Operations
- Pallet Couplers
- Restraint

Part 121 WBCP Reviews

- **WBCP reviews**
 - 12 of 85 initial reviews complete
 - 3 of 85 reviews concurred/closed
- **Under review:**
 - Initial Review: 5
 - Follow-up Reviews: 8 (Working with CMTs)

Part 121 WBCP Findings

❑ Source documents

- Programs are not derived from approved sources (TC/STC WBMs)
- Operating limitations exceeded
- Not provided or cannot be found

❑ Cargo Restraint Methods

- Using procedures not defined by TC/STC WBM
 - Coupled Pallets
 - Strapping to seat tracks
 - Pallet and strap combination for ULD
 - Oversimplified method for calculating restraint
- Engineering groups for Special Cargo (not using only WBM)
 - Methods/Procedures are not defined

❑ Computer W+B Systems

Regulatory Path: Operating limits

□ 14 CFR § 91.9(a) *Do not exceed operating limitations of AFM*

- Certificate holders are required to comply with 14 CFR § 91.9(a).

□ 14 CFR § 25.1581 *Airplane Flight Manual*

- Weight and Balance (W&B) control and loading document (AKA WBM)

□ 14 CFR § 21.41 *Operating limits part of Type Certificate (TC)*

- Changing operating limits is a change to the TC (STC)

Types of Cargo

□ Cargo is either a ULD, Bulk or Special Cargo

- ULD: A Unit Load Device (ULD) is a device for grouping, transferring, and restraining cargo for transit. It may consist of a cargo pallet and cargo net combination or a container
- Bulk Cargo: (defined by AFM) cargo enclosed in a certified bulk compartment.
- Special Cargo: Cargo that is not contained in a ULD certified for the airplane CLS or enclosed in a cargo compartment certified for bulk loading is special cargo. This type of cargo requires special handling and securing/restraining procedures.

Types of Cargo

Unit Load Device Examples



•238.5 inches long by 96 inches wide

Container Unit Load Device



TSO Tag



Pallet Identification



Hazardous Material Notification



Military Operations

❑ Civil Reserve Air Fleet (CRAF)

- Airline contractually promise aircraft to various segments
- To assure U.S. of adequate airlift reserves, the government makes peacetime DoD airlift business available to civilian airlines that offer aircraft to the CRAF program

❑ Military Charters

- DOD offers business through the CRAF Charter Airlift Services contract

❑ **Airline must follow FAA regulations (14 CFR) regardless of the type of operation**

Pallet Couplers Update

- ❑ What are Coupled pallets or a Pallet Train?
- ❑ These are 2 or more 463L military pallets “coupled” together in a line.

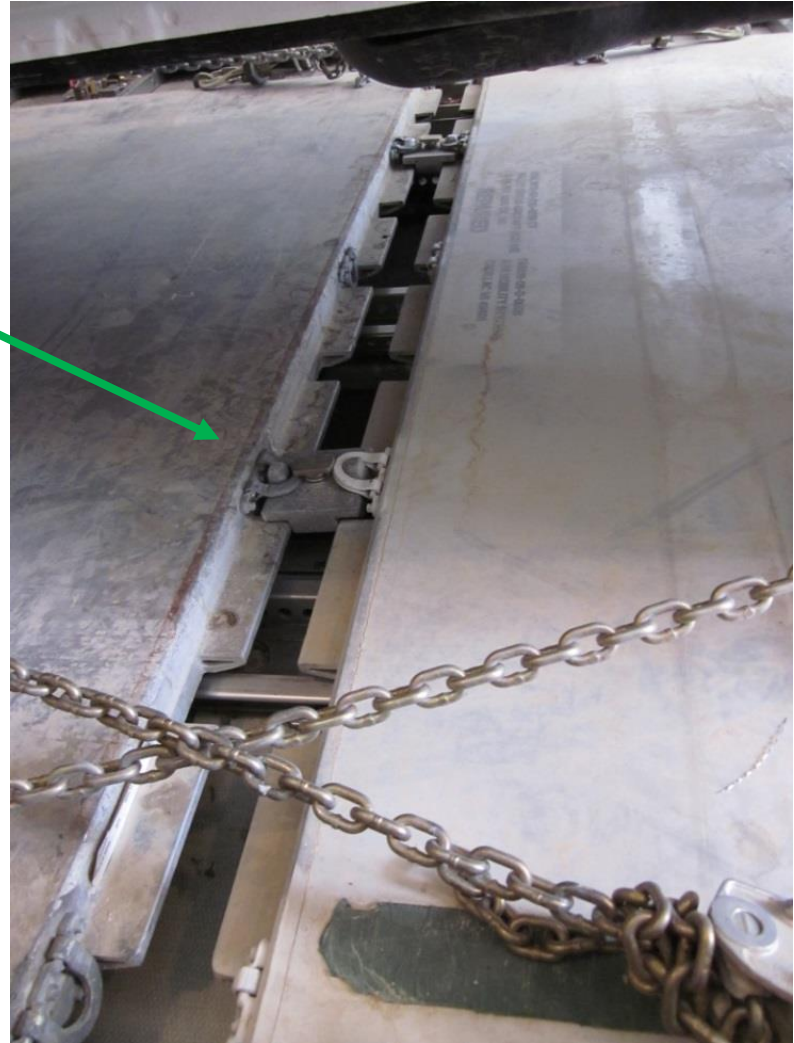


This Toyota Truck is on two 463L military pallets linked together by a coupler device in order to make one longer pallet. The military can link several of these together to make a “pallet train”.

Pallet Couplers Update



- ❑ Pallet coupler installed between two 463L pallets
- ❑ The C5-A and C-17 uses 436L with pallet couplers because each pallet is restrained along the inboard and outboard sides of the pallet in the fwd/aft, vertical, and side directions.

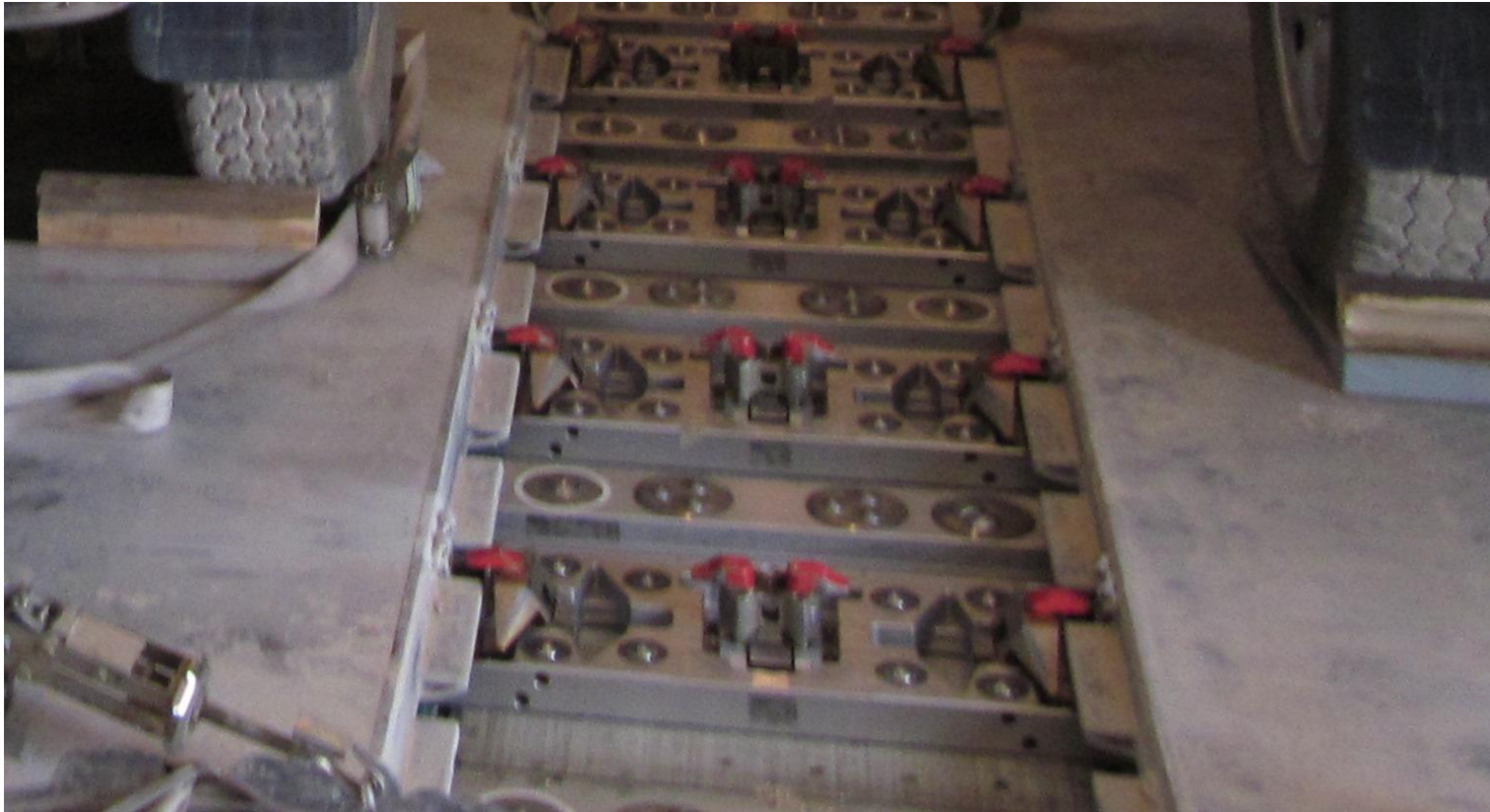


Pallet Couplers

- ❑ **Problem:** Although 463L pallets fit on this Boeing 747, they are restrained on the side only in the lateral direction because of the notches in the pallet.
- ❑ **Problem:** Although 463L pallets fit on this Boeing 747, they are certified only as a netted pallet. This means one pallet/net at a time, not coupled.
- ❑ **Problem:** Although 463L pallets fit on the Boeing 747 the STC WBM requires that they conform to the TSO and must have a TSO tag on the pallet and net.

Pallet Couplers

- ❑ **Problem:** Although 463L pallets fit on the Boeing 747 at some locations, the 463L notches align with the center line vertical locks. This truck is unrestrained along the inboard side vertically.



Pallet Couplers

- ❑ Pallet coupler installed between two 463L pallets
- ❑ **Problem:** This is where the Boeing 747 pallet locks are supposed to be raised up to react fwd/aft and vertical loads.
- ❑ **Problem:** These locks are not raised and the pallet is sitting on top of them.



Pallet Couplers

Result

- ❑ These two coupled pallets do not comply with the required Weight and Balance Manual.
- ❑ Under vertical gust loads, the unrestrained middle portions of the pallet are forced upward causing the forward and aft locks to disengage resulting in the truck being unrestrained in the vertical direction.
- ❑ Because of the missing pallet locks in the center and the coupler fails in compression:
 - The forward pallet is unrestrained in the aft direction.
 - The aft pallet is unrestrained in the forward direction



This is unsafe.

Special Cargo

- ❑ What has been done in the past?
- ❑ All of the outboard tiedowns are in the passenger seat tracks. This is not permitted due to low strength of track.
- ❑ The side of the vehicle tiedown locations were not permitted by ATTILA.



Special Cargo



Restraint



Special Cargo



Calculating Restraint

- ❑ Some Operators are still using an over simplified method where the tiedown is based on strength of the strap rather than airplane. (3,750 pounds is 75% of the rated strap strength)

- ❑ Note – Many TC/STC WBMs allowable loads in certain directions are less than the assumed “conservative” 3,750 lbs.

Changes To The AFM/WBM

- ❑ [FAA ORDER 8110.4C](#), *Type Certification*, provides procedures for evaluating and approving aircraft, engine, and propeller type design data and changes to approved type design data.
- ❑ It applies to:
 - AIR, AFS, AEG, and Persons/organizations designated by the Administrator associated with the certification processes required by 14 CFR part 21.
- ❑ Chapter 2 addresses the Type Certificate process and further states the Aircraft Certification Office (ACO) is the approval authority.

Changes To The AFM/WBM

- ❑ Principal Inspectors are not authorized to accept/approve processes, procedures and/or manuals that exceed the operating limitations of the AFM/WBM; doing so contradicts §91.9(a) and FAA Order 8110.4C.
- ❑ This practice has the potential to lead to noncompliance and unsafe conditions.

Sources of Confusion

- ❑ Misapplication of §43.13(a); “Practices acceptable to the Administrator”
- ❑ Misconceptions:
 - §43.13(a) does not apply to the WBM
 - The WBM contains loading instructions not operating limitations.
- ❑ The certificate holder to revise the operating procedures sections and modify the presentation of performance data. (Ref: §91.1023(a), §91.1025(a), §121.141(b), §125.75(a)(b) and provisions of part 135)
- ❑ *What is an operating limitation?*

Operating Limitation (OL) Examples

□ Processes/procedures that may exceed OL:

- Seat track and attachment allowable load limitations exceeding WBM limitations
- Intermodal containers loaded offset on ULDs
- ULDs (e.g. 463L w/net) not listed in the WBM
- Altering Unit Load Devices (ULD) as defined by AFM/WBM, such as:
 - Classifying the strap/pallet combination as an ULD*
 - Modifying a pallet listed in the WBM
 - The use of coupled pallets
- Oversimplified restraint calculation method

* Boeing Supplement
D636H000-NASCLCr02

Cargo Compliance Expectations

- ❑ Compliance expectations for operators:
 - Comply with operating limitations specified in the approved Airplane or Rotorcraft Flight Manual, markings, and placards, or as otherwise prescribed by the certificating authority of the country of registry
 - AC 120-85A is an alternate means but not the only means of compliance with 14 CFR
- ❑ What should operators expect from the FAA:
 - Meet intent of AC 120-85A
 - Review all part 121 weight and balance control programs using job aids

In Closing

- ❑ Cargo operations are an ever changing industry
- ❑ The risk of a weight and balance (W&B) related accident occurring with cargo flights is higher than with passenger flights
- ❑ Cargo operations continue to be evaluated for areas of high risk

- ❑ The Cargo Focus Team reviews are based on compliance to 14 CFR 91.9 using the TC/STC WBM operating limitations.

Questions

