

# Federal Aviation Administration

## A Path For Cargo Operations Compliance

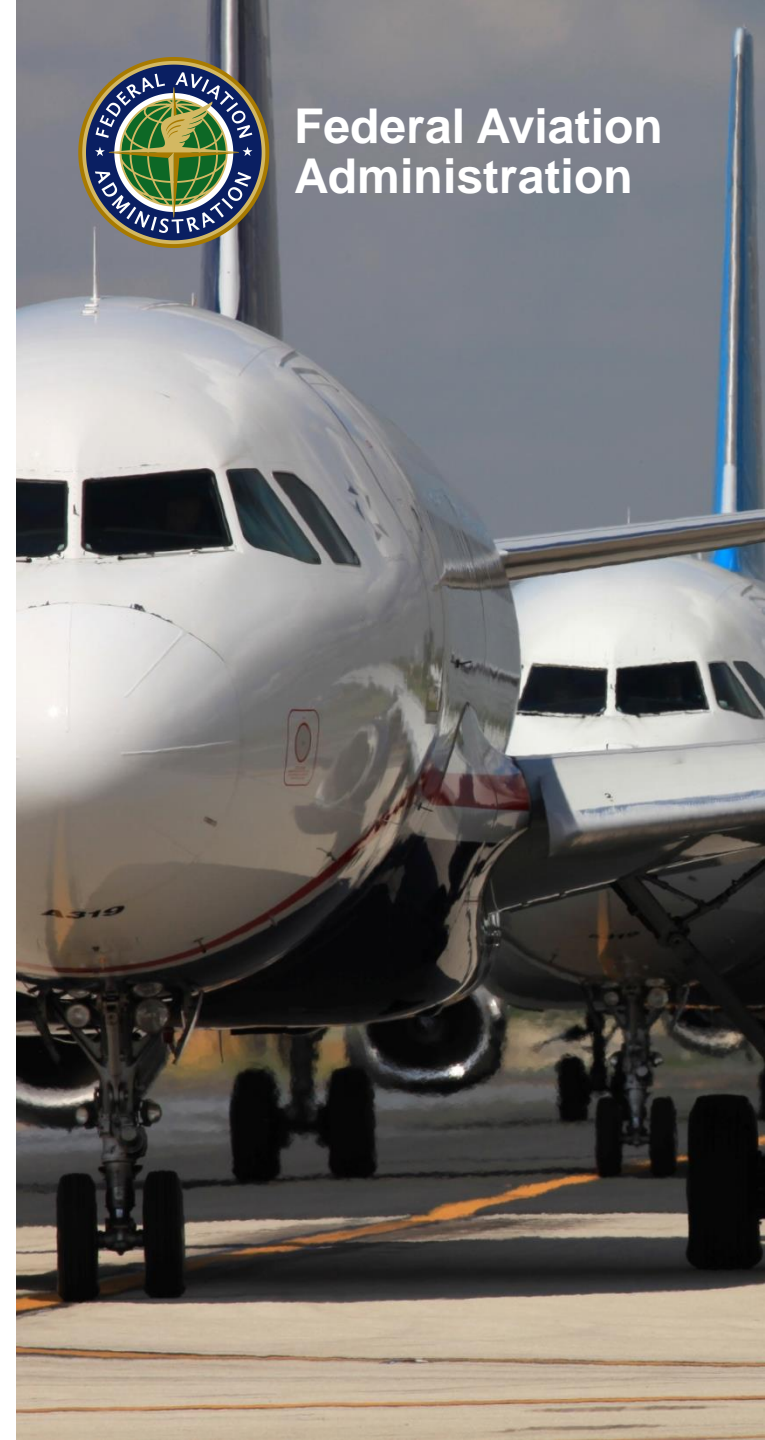
Presented to: IATA 4<sup>th</sup> ULDR Forum

By: Patricia Williams, Steve Fox

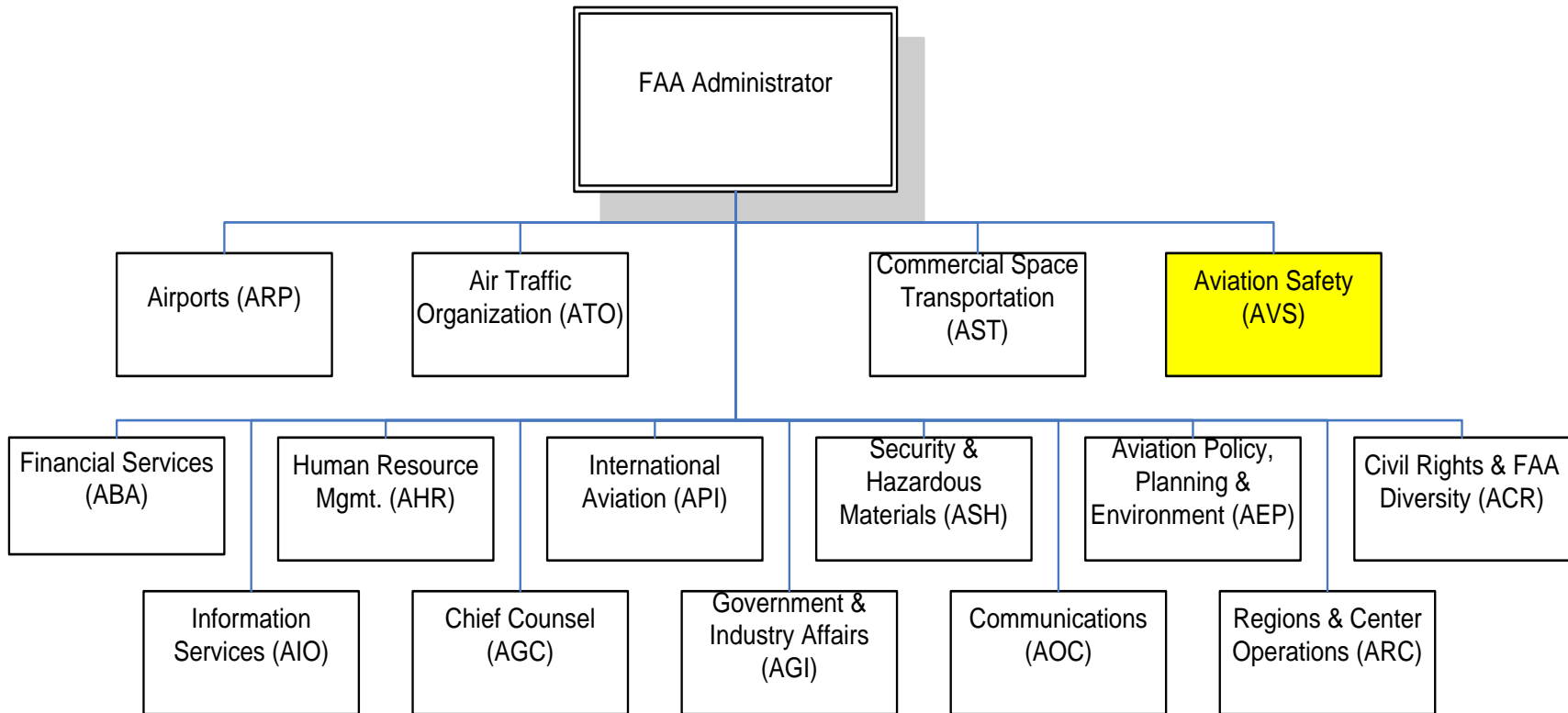
Date: September 29-30, 2016



Federal Aviation  
Administration



# Structuring



# Cargo Focus Team (CFT)

- ❑ 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](mailto:9-NATL-Cargo-CFT@faa.gov)
- ❑ Members include Transport Aircraft Directorate (Certification), Air Transportation Division - HQ (Operations), Aircraft Maintenance Division – HQ (Airworthiness), and inspectors from the field

# Overview

- ❑ FAA AC 120-85 revision
- ❑ FAA Cargo Action
- ❑ Recommendations made to FAA from B-747 Accident
- ❑ Ramp Inspections and Findings (Former and Current)
- ❑ Regulatory Compliance in Cargo Operations

# FAA AC 120-85A Changes

## □ Major rewrite of AC 120-85

- First revision in 10 years
- Includes five new sections
  - Transport of Special Cargo
  - Use of Multiple Entities
  - Cargo Staging
  - Checklists and/or Job aids
  - Operator's Evaluation System for Weight and Balance Control
- Enhancements concerning ULDs, restraint, training, and new/revised definitions

# 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)
- ❑ **Responsibility.** The operator is always ultimately responsible for cargo loading/securing and safety of flight

# 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.

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

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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;



# AC 120-85A Highlights

## 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.

## 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)

# AC 120-85A Highlights

## □ Training

- Job functions based on subject matter
- Training needs based on job functions
- Recurrent training every 24 months
- Retain current training record



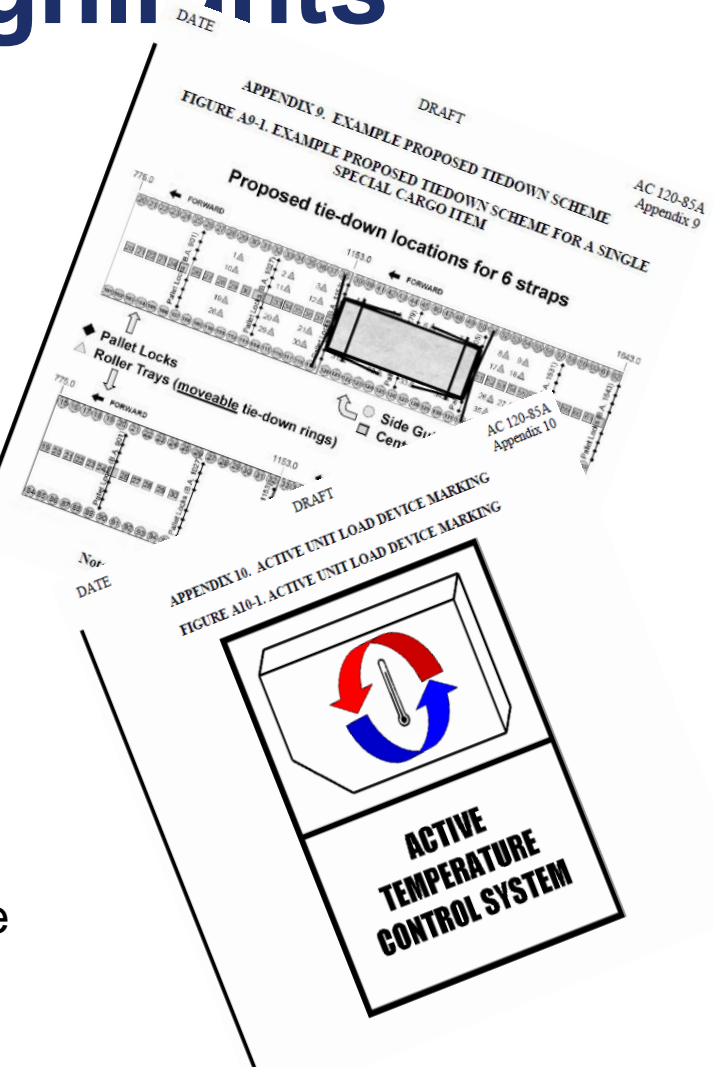
# AC 120-85A Highlights

## ❑ 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

## ❑ Appendices

- 25 New or revised definitions
- 2 New Appendices:
  - Example of Proposed Tiedown Scheme For A Single Special Cargo Item
  - Active Unit Load Device Marking



# FAA Cargo Action

- ❑ Achieving Excellence
- ❑ Short and Long Term Goals
- ❑ Unified Efforts with Stakeholders
- ❑ Cargo Operations Initiatives



# Short Term Goals

- **WBCP reviews - Cargo**
- **OpSpec Proposal**
  - Cargo Load and Control
- **Inspector training**
- **Surveillance tools update**
- **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	UJEA					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	UJEA						
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		
Fed Ex	FDEA	X					
					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**
- **Aviation Rulemaking Advisory Committee(ARAC) of a Loadmaster Certification**
- **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**
- **Biannual Stakeholder meetings**



# Unified efforts with Stakeholders

## □ Boeing

- Weight and Balance Workshop
- Providing solutions to current industry needs
  - Seat Track allowables, tall rigid cargo and frangible cargo
  - Intermodal containers
  - Straps/pallet as approved combination
  - Vehicles on pallet

## □ Department of Defense (DoD)

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

## □ National Air Carrier Association (NACA)

- Participation in Special Cargo meetings

## □ IATA ULD Forums

- Participation in IATA ULD forums

# Cargo Initiatives

## ❑ Transport of intermodal containers

- Continued Airworthiness Notification to the International Community (CANIC) dated September 22, 2014
- Final rule published July 13, 2015

## ❑ Transport of vehicles (in work)

- SAE ARP1554D states single car on pallet is transported in lower lobe only
- SAE ARP1554D states double rack car transporter requires an STC





# Recommendations made to FAA from B-747 Accident

- ❑ NTSB assumed responsibility from the Afghan government for completing the final report into the April 29, 2013, crash of a National Airlines Boeing 747 at Bagram
- ❑ The Afghanistan Civil Aviation Authority delegated the remainder of the investigation to the NTSB, which will included completing the final report.
- ❑ NTSB final report published July 29, 2015

# Recommendations made to FAA from B-747 Accident

- ❑ 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.

# Recommendations made to FAA from B-747 Accident

- ❑ 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.

# Recommendations made to FAA from B-747 Accident

- ❑ 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.

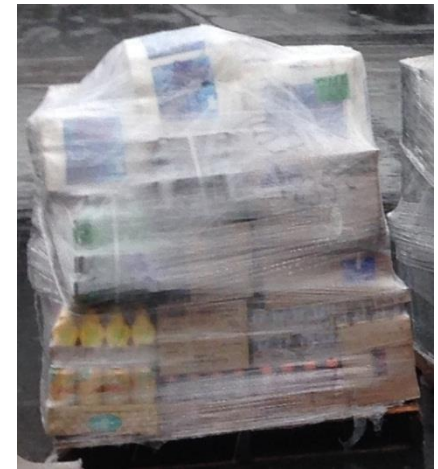
# Former Ramp Inspections

- Procedures based on manufacturer's data or other approved data applicable to the airplane being operated
- Training for cargo handling (initial and recurrent)
  - Use of Multiple entities (Outsourcing)
  - Freight Forwarders
- 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.

# Current Ramp Inspections

## □ Typical findings

- Strapping to seat tracks
- Pallet and strap combination for ULD
  - Not authorized by WBM and
  - Method not supported with testing data
- D6 Claw Hook
- Shrink wrapping



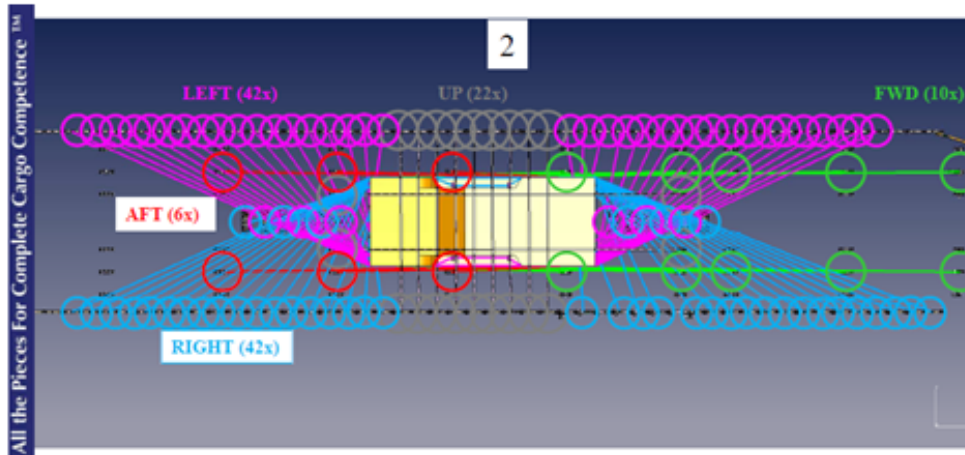


# Background

## 2013 National Airlines Flt 102 accident:

### NTSB Preliminary Findings

Telair showed that if they followed the 14 CFR 91.9 manuals (8100.4C) This was required: **(122 straps)**



**1** M-ATV allowed per airplane may be carried – **flight loads only** (limited by tie downs + side load capability)

**3** Cougar + **2** M-ATVs carried on accident airplane

FAA approved National Manuals were not conforming to the Telair W+B. The current National CMO required removal of all of this data from the National Manuals a long time ago.

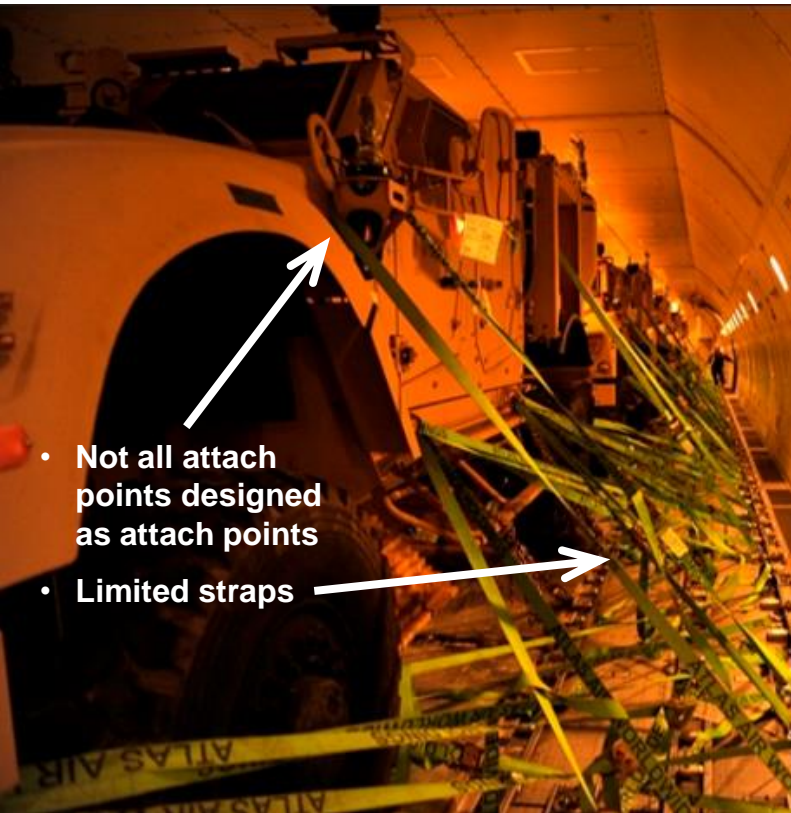
**IF STC WBM was followed.... 1 M-ATV flown, no Cougars, - NO ACCIDENT**



# Background

## 2013 National Airlines Flt 102 accident:

Typical loading practice leading up to accident (various operators)



# Observed Certification Issues

- Deviations to OEM Weight and Balance Manuals (WBM) made without Supplemental Type Certificate WBM Supplements
- DERs incorrectly approving WBM, WBM Supplement, and supporting data
  - WBM approval authority cannot be delegated to a DER (FAA Order 8100.8)
  - Structures DERs erroneously approving WBM and WBM Supplements
  - Some STCs issued without corresponding WBM Supplement referenced as limitations
  - Some changes allow potential to exceed airplane design capability
  - Some changes allow potential for unsafe conditions
- Errors in Type Certificate and Supplemental Type Certificate WBMs create undefined, non-compliant, or potentially unsafe operations
- STCs issued for cargo related modifications with no WBM supplement (*may not use pallet, container, etc. unless STC WBMS applies to their airplane*)
  - Potential to exceed airplane design capability
  - Potential for unsafe conditions
- Un-level playing field and lack of standardization

# Observed Certification Issues

Adequate restraint for proper loads in all directions?



- Cargo not adequately secured to pallet, fixture, or airplane
- Weight and Balance Manual (WBM) coverage?
- Engineering approval?

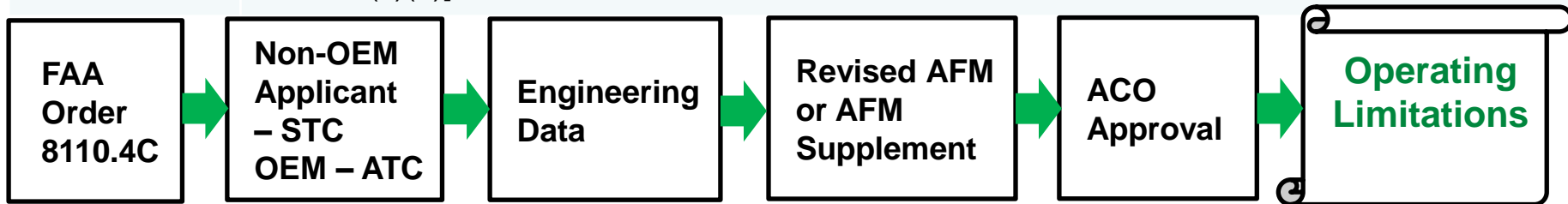


# Example Findings

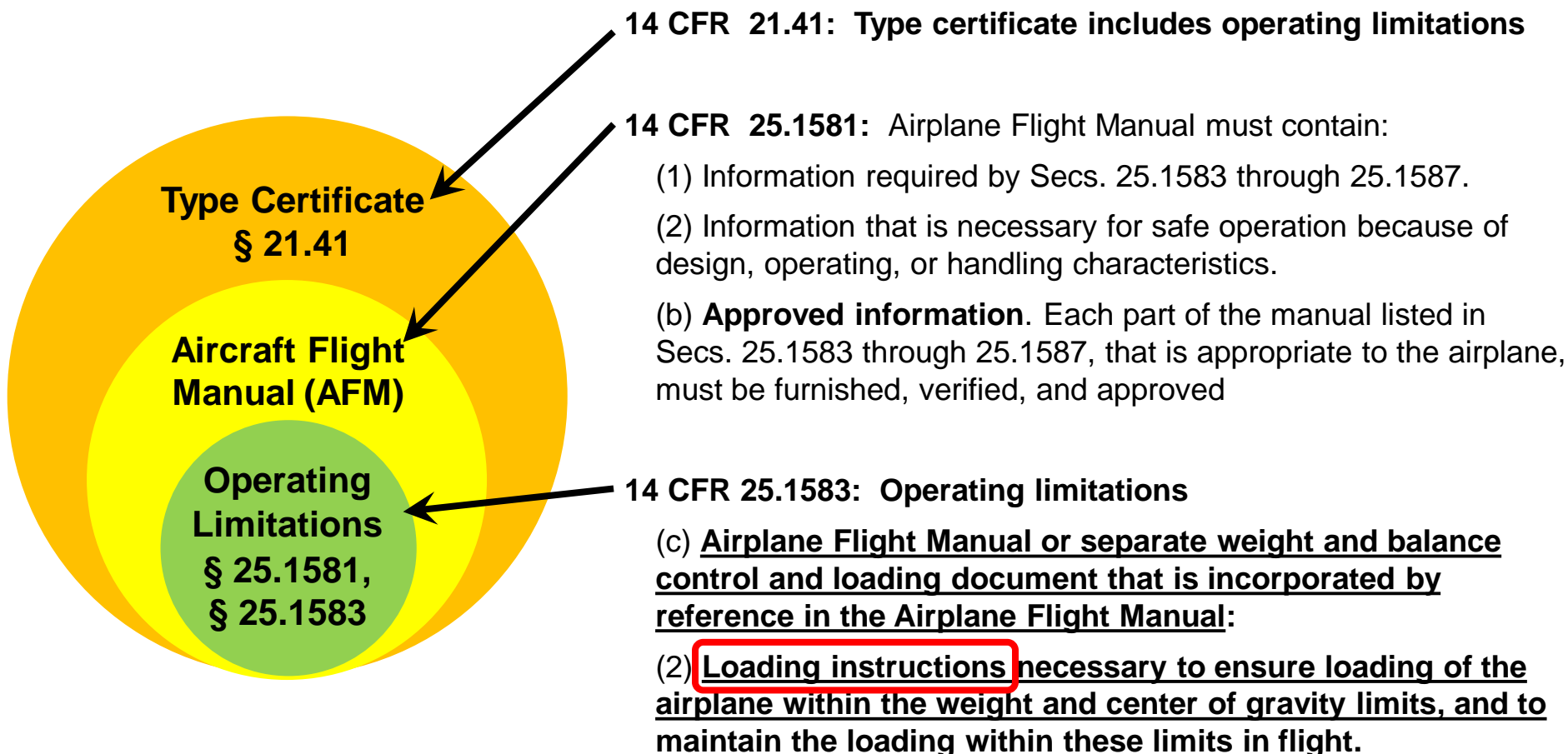
- **WBM Supplement** – allow pallets of a given size without definition of pallet type (no requirement for specification or STC)
  - Potentially unsafe condition (*e.g., wooden pallets are commonly used in U.S., chains and straps to pallets exceeding airplane design loads, TSO ULD, damaged beyond limits ULDs, and the ability to overload the TC/STC cargo loading system*)
- **STC** for pallet or cargo loading/securing modification with no corresponding WBM Supplement
  - Does not comply with § 25.1583
  - Not permitted for use (§ 91.9)
- **STC** for pallet or cargo loading/securing modification with DER approval only for §§ 25.1581, 25.1583 and **Operator Manuals** (no WBM Supplement)
  - Does not comply with § 25.1583
  - DERs do not have authority to approve or change AFM Limitations
- **WBM Supplement** that allows loading that exceeds OEM design capability without supporting substantiating data
  - Potentially unsafe condition

# How We Conduct Business Today

FAA Order 8110.4C	Operation/Revision of Operating Limitation in “Manuals” (TC/STC WBM vs Operator WBM)
<b>Method</b>	<ul style="list-style-type: none"> <li>• OEM: Amended Type Certificate (<b>ATC</b>) or Supplemental Type Certificate (<b>STC</b>)</li> <li>• Non-OEM: <b>STC</b></li> </ul>
<b>Data</b>	Compliance data (part 21, 25)
<b>Vehicle</b>	TC/STC - <b>AFM or AFM Supplement</b>
<b>Data Approval</b>	TC - OEM Designees, ODA; STC – Applicant Designees, ODA - or ACO
<b>Process</b>	<p><b>ACO approves AFM/AFM Supplements</b> - requires concurrence with the operational limitations: Flight test pilot; Flight test engineer; AEG operations specialist; FAA engineers [A DER may should <b>recommend</b> approval, unless specifically authorized in writing to approve the AFM or AFM Supplement]</p>
<b>Output</b>	<b>AFM or AFM Supplement contains Operating limitations</b> [including loading instructions, 25.1583(c)(2)]



# Regulatory Review - Operating Limitations



**14 CFR Sec. 91.9(a):** “No person may operate a civil aircraft without complying with the operating limitations specified in the approved Airplane or Rotorcraft Flight Manual”

# Designee Authorization

## FAA Order 8100.8 Designee Management Handbook

### STRUCTURAL

See FAA Order 8110.37, Appendix B, Chart A

#### DER APPLICATION EVALUATION TECHNICAL CRITERIA

*Delegated Functions and Authorized Areas*

Requested Areas	STRUCTURAL LOADING LIMITATIONS
	8H Loading Control Documents
	8P Special (Specify)

Type Certificate or Supplemental Type Certificate structural substantiation data

Aircraft Flight Manual (AFM) or AFM Supplement

### FLIGHT TEST PILOT

See FAA Order 8110.37, Appendix 2, Chart H

#### DER APPLICATION EVALUATION TECHNICAL CRITERIA

*Delegated Functions and Authorized Areas*

DER APPLICANT USE ONLY	
Requested Areas	RECOMMEND APPROVAL OF AIRCRAFT FLIGHT MANUAL
	6A Aircraft Performance
	6B Flight Characteristics
	6C Propulsion Systems
	6D Hyd., Elec., & Pneumatic Systems
	6E Pressurization & A/C Systems
	6F Flight Instruments & Systems
	6G Auto. Control Systems
	6H Ice Protection Systems
	6I Operating Limitations/Procedures
	6J H/V (Rotorcraft)
	6K Special (Specify)

# Cargo Compliance Expectations

## ☐ Compliance expectations:

- 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

## ☐ Expect from the FAA

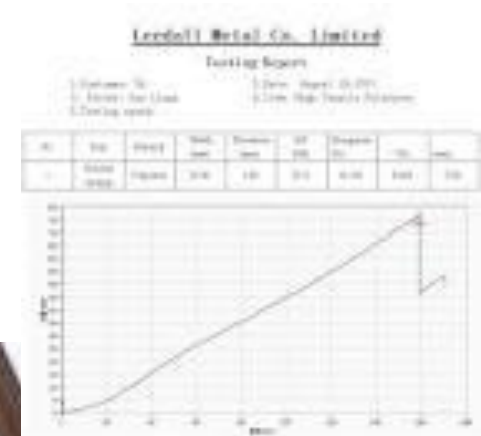
- Meet intent of AC 120-85A
- Review all part 121 weight and balance control programs using job aids



# How You Can Help

## □ Recommendations

- Support cargo operations with testing data for approval process
- Link industry guidance to aircraft with data
- Manufacturer's provide serviceability limitations on products



# Questions

