DELEGATED ENGINEERING REPRESENTATIVES GROUP
{DERS GROUP SVC INC.}

PRESENTATION OF::

Modification and Replacement Parts (MRP's)(MRP's)

The Various FAA Approval methods & EASA/Bi-lateralslaterals

Dominick P. DaCosta

FAA DER-T/DARTFDAR

Technical Consultant

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FAA DER DISCLAIMER

- The Federal Aviation Administration is not in any way responsible for the data, or the opinions presented in this presentation.presentation.
- The opinions and data presented herein are the those of the presenter.
- The audience is responsible to confirm all data, relative to FAR's, Orders, and Advisories for accuracy and being the current revisions.
- This FAA Delegate's function as a DER is defined in FAR 183, and FAA Order 8110.37D
- FAA data may be obtained on Fedworld, at www.fedworld.gov

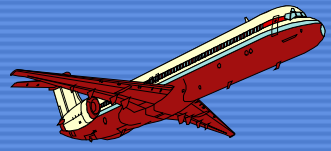
About your Instructor

- Dominick P. DaCostaDaCosta
  - FAA DER-T Engines Chart E, Powerplant Chart B, Systems Chart C1, Structures Chart A ~ PMA Findings Authority & Major Repair/Alterations
  - FAA DAR-F ~ Class I, II, and III Parts .
  - 25 years Aerospace Manufacturing Engineering
  - 15 years Engine/APU Maintenance & Repair Engineering
  - Worked with GE, P&W, Textron/Lycoming, Rolls Royce, Honeywell, Garrett, Bendix, Bell, Sperry, Allied Signal, CTL Inc., United Airlines, American Airlines, Lufthansa, MTU, Parker, Hamilton, Alitalia, Air France and CRMA.
  - ASNT Level III Since 1976~2008
  - Licensed FAA Mechanic
  - Certified by National Institute for the Certification of Technologist [NICET~NSPE] NICET~N
    - Senior Welding Engineering Technologist ~ 1979 ~ 2008
  - Education: Indiana University, Ohio State University, Sperry Technical Institute, & Kings Aeronautical Institute

Workshop Agenda —MRP Repairs & Alt SESSION

- Definitions and Acronyms
- What is a Repair Really?
- What is a Alteration?
- What rules apply to a “MRP”?
- How many ways does the FAA allow to approve “MRP’s”?
- The Enumerated FAA ways to an Approved part & the CFR links
- Who can approve “MRP’s”?
- What FAA branches need to approve “MRP’s”?
- FAA Guidance i.e. Orders, AC’s
- International rules ~ Bi-laterals, laterals, EASAEASA
- EASA & FAA “Executive Directives” ED 2007-01CFCF
- Other Bi-lateralslaterals
- Options if product is Non-USA USA origin of design!
- Classification Issues
- ReRecap of session
- Off Line discussions

AC-FAA	FAA Advisory Circular
ACO	Aircraft Certification Office [A FAA Branch]
ACE	Aircraft Certification Engineer [FAA-ACO]
AD-FAA	Advisory Directive - Issued by FAA
AEG	Aircraft Equipment Group [A FAA Branch]
APIS	Approved Production Inspection System
AMM	Aircraft Maintenance Manual
AS	National Aerospace Standards
ASI	Airworthiness Safety Inspector
BAA	Bilateral Airworthiness Agreement
BASA	Bilateral Aviation Safety Agreement
CAA	Civil Aviation Authority
CAR	Civil Air Regulation
CMACO	Certificate Mgmt ACO
CMM	Component maint manual
DAR	Designated Airworthiness Representative
DAR-F	Designated Airworthiness Representative(Manufacturing)
DAR-T	Designated Airworthiness Representative(Maintenance)
DAS	Delegated Alteration Station
DER	Designated Engineering Representative
DER-T	Consultant Designated Engineering Representative
DER-Y	Company Designated Engineering Representative
DMIR	Designated Manufacturing Inspection Representative
EASA	European Aviation Safety Adm
FAA	Federal Aviation Authority
FAR	Federal Aviation Regulations
FIS	Fabrication Inspection System
FOIA	Freedom of Information Act
FSDO	Flight Standard District Office [A FAA Branch]
IFCAW	Instructions for Continued Airworthiness [aka: ICA]
IPC	Illustrated Parts Catalog
JAA	Joint Aviation Authority
MARPA	Modification and Replacement Parts Association
MIDO	Manufacturing Inspection District Office [A FAA Branch]
MIS	Manufacturing Inspection Specialist [A FAA Staff Position]
MS	Military Standard
MRP	Modification and Replacement Parts [14 CFR Part 21.303]
NPRM	Notice to Proposed Rule Making
ODAR	Orginizational Designated Airworthiness Representative
ODAR-F	Orginizational Designated Airworthiness Representative(Manufacturing)
ODAR-T	Orginizational Designated Airworthiness Representative(Maintenance)
OEM	Original Equipment Manufacturer
Orders-FAA	FAA Orders issued to define methods or procedures to accomplish rules
PACO	Project Aircraft Certification Office
PC	Production Certificate
PM's	Policy Memo's - FAA driven guidance to accomplish FAR, Orders, AC's
PMA	Parts Manufacturing Approval
PMI	Principle Maint Inspector [FAA FSDO]
RFC	Request For Conformity issued by ACO to MIDO/FSDO
SB	Service Bulletin [Issued by OEM, TC, STC, TSO, or PMA]
SRM	Structural Repair Manual
STC	Supplement Type Certificate



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KEY FAA ACRONYMS

FAA ACRONYMS –CONTC

FAA Order 8100.14a EASA Working Procedures

FAA Order 8110.54 ICA

FAA Order 8110.42C PMA

FAA Advisories: AC 33.2B Engine Design, AC 33 draft XX Repair – Engine Component Repairs, AC 43-18 chg 1 – Fabrication of Parts within a Repair, AC 23.1309-1C – Safety Analysis, AC 25.1309-1A – Safety Analysis Transport Aircraft, AC 33.75-1 Safety Analysis Engines, AC 25.571 – damage Tolerance, AC 120-77 Maintenance & Alterations, 8900.1 Chap 4 Job Aids for Major Alterations.

Soon to be released: N8110.RS – Repair Specification DER

What is a repair Really?

- **A repair regardless of its category [Minor or Major] IS a change to the type design if its release occurred after the initial TCDS was issued! So it is a Modification!**
  i.e. Service Bulletins, Service Information Letters, IEN's, CDR's, Non-book repairs [Field approvals] etc.

- **It's a repair IF, when performing maintenance you cannot return the component to service after ICA inspection to existing limits. In other words, you have exceeded recommended limits noted in the OEM's specifications, and to restore the component to airworthy condition you must perform additional tasks! [It's BROKEN!]**
- **A repair simply put is a "Modification and Replacement Part" and therefore falls under 14 CFR Part 21.301, 21.303, & 21.305**

- **Let's see the definition in the new Revision of 8110.37D**

Repair definition from 8110.37D

4-12. Repairs and Alterations. A *repair* is the restoration of a damaged airframe, powerplant, propeller, or appliance accomplished in such a manner and using material of such quality that its restored condition will be at least equal to its original or properly altered condition (with regard to aerodynamic function, structural strength, resistance to vibration and deterioration, and other qualities affecting airworthiness). The damage can be due to deterioration or to external causes. An *alteration* is the modification of an aircraft from one sound state to another sound state; the aircraft meets the applicable airworthiness specifications and standards both before and after the modification.

a. Major Repairs and Major Alterations. Major alterations and major repairs must be accomplished in accordance with technical data approved by the Administrator. A DER may approve design and substantiation data, if specifically authorized, to support a major repair or major alteration. However, this DER approved data may not be adequate to cover every aspect of the repair or alteration. Repairs or alterations involving flight manual supplements, airworthiness limitations, ground and flight test plans, ground and flight tests, compliance inspections, modifications to critical structure or life limited parts, instructions for continued airworthiness, special conditions, and equivalent level of safety findings may require data that a DER is not normally authorized to approve. If the repair or alteration requires approval of data beyond the DER's authority, then additional approval, such as an FAA field approval or ACO approval, is required.

What is a FAA DER?

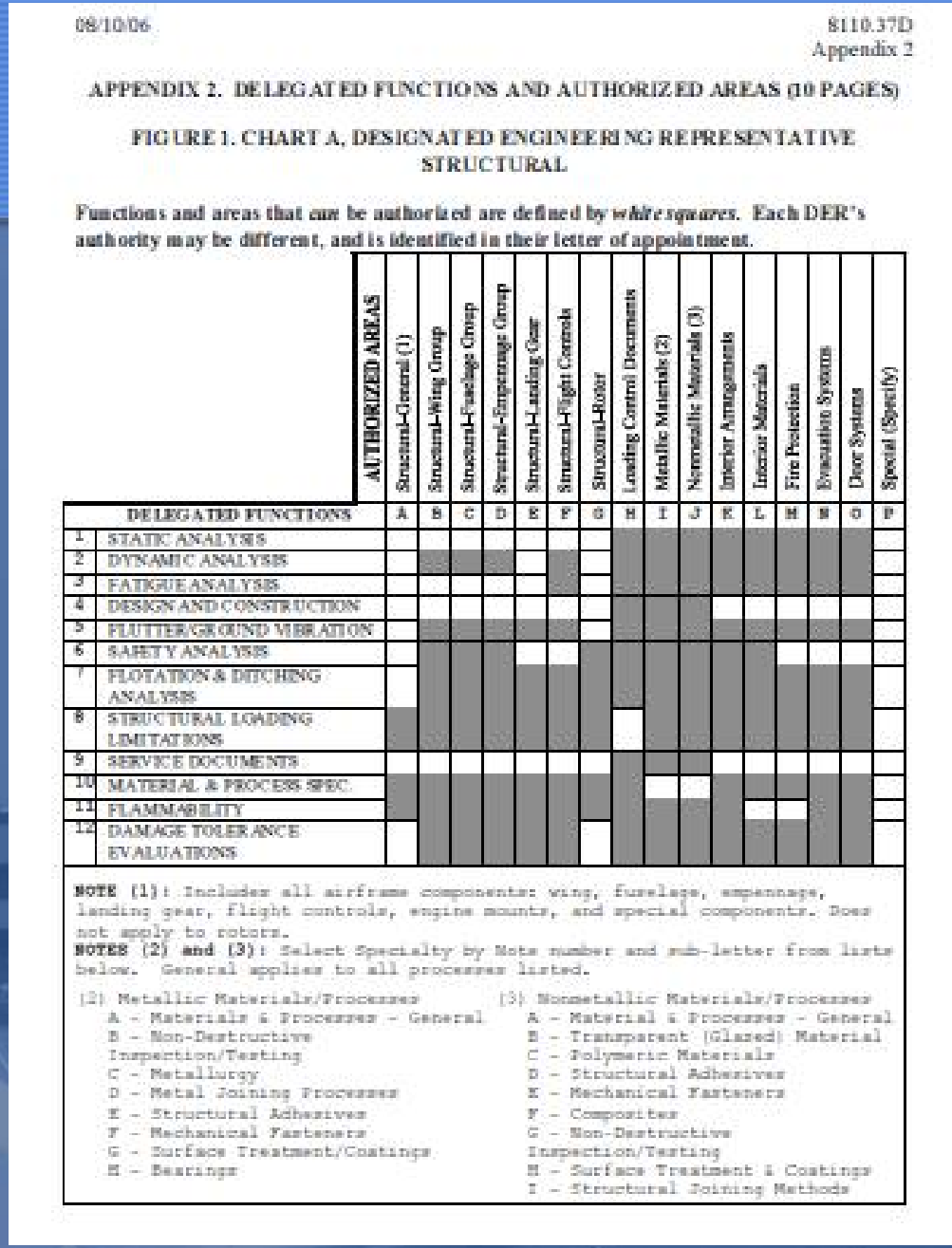
- They are designees of the FAA ACO
- They are legally empowered under 14 CFR 183.29 and Order 8110.37D to act on behalf of the FAA in certain and specific areas noted in their C.O.A.
- They approve Design Aspects [Compliance]
- They do this by issuing a FAA Form 8110-3
- They have limitations by law and FAA National policies [8100.8C & 8110.37D]
- There are Company DER's [DERY], and Consultant DER's [DERT].

FAA DER [Continued]

- Not all DER's can approve Major Repairs or Major Alterations [see 8110.37D]
- Not all DER's can approve "Processes" [See 8110.37D] Charts A, and E
- DER's do not approve "Installation" of the repair, that falls under FAA FSDO [see 8900.10 & Order 8110.37D]
- DER's have to have special delegation for multiple repair data approval.

8110-37D Charts

Presently DER Charts define Delegated authority by Areas, & Functions. The FAA is soon to introduce an additional requirement that will add a 3rd dimension by defining what regulations the DER can make findings to. This will be on-line based and can be updated daily.



08/10/06 8110.37D
Appendix 2

APPENDIX 2. DELEGATED FUNCTIONS AND AUTHORIZED AREAS (10 PAGES)

FIGURE 1. CHART A, DESIGNATED ENGINEERING REPRESENTATIVE STRUCTURAL

Functions and areas that can be authorized are defined by *white squares*. Each DER's authority may be different, and is identified in their letter of appointment.

	AUTHORIZED AREAS	Structural-General (1)	Structural-Wing Group	Structural-Fuselage Group	Structural-Empennage Group	Structural-Landing Gear	Structural-Flight Controls	Structural-Rotor	Loading Control Documents	Metallic Materials (2)	Nonmetallic Materials (3)	Interior Arrangements	Interior Materials	Fire Protection	Evacuation Systems	Door Systems	Special (Specify)
	DELEGATED FUNCTIONS	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	STATIC ANALYSIS								■	■	■	■	■	■	■	■	
2	DYNAMIC ANALYSIS		■	■	■		■		■	■	■	■	■	■	■	■	
3	FATIGUE ANALYSIS						■		■	■	■	■	■	■	■	■	
4	DESIGN AND CONSTRUCTION								■	■	■						
5	FLUTTER/GROUND VIBRATION		■	■	■		■			■	■	■	■	■	■	■	
6	SAFETY ANALYSIS		■	■	■				■	■	■	■	■				
7	FLOTATION & DITCHING ANALYSIS		■	■	■	■	■		■	■	■	■	■	■	■	■	
8	STRUCTURAL LOADING LIMITATIONS	■	■	■	■	■	■			■	■	■	■	■	■	■	
9	SERVICE DOCUMENTS								■	■	■						
10	MATERIAL & PROCESS SPEC.	■	■	■	■	■	■	■	■			■	■	■	■	■	
11	FLAMMABILITY	■	■	■	■	■	■	■	■	■	■	■		■	■	■	
12	DAMAGE TOLERANCE EVALUATIONS		■	■	■	■	■		■	■	■	■	■	■	■	■	

NOTE (1): Includes all airframe components: wing, fuselage, empennage, landing gear, flight controls, engine mounts, and special components. Does not apply to rotors.

NOTES (2) and (3): Select Specialty by Note number and sub-letter from lists below. General applies to all processes listed.

(2) Metallic Materials/Processes
- A - Materials & Processes - General
- B - Non-Destructive Inspection/Testing
- C - Metallurgy
- D - Metal Joining Processes
- E - Structural Adhesives
- F - Mechanical Fasteners
- G - Surface Treatment/Coatings
- H - Bearings

(3) Nonmetallic Materials/Processes
- A - Material & Processes - General
- B - Transparent (Glazed) Material
- C - Polymeric Materials
- D - Structural Adhesives
- E - Mechanical Fasteners
- F - Composites
- G - Non-Destructive Inspection/Testing
- H - Surface Treatment & Coatings
- I - Structural Joining Methods

What is an Alteration?

- **An Alteration like a repair is also a change to the type certificate! But unlike a Major repair a Major alteration always requires a Form 337.**
- **An alteration means the component was IN an airworthy condition, and you are taking it from its original approved design, to another approved design! [It's NOT broken!]**
- **You can also have a repair with an alteration combination!**

Who's Definition of Minor Repair/Alterations is best?

Several definitions exists regarding these two "Modifications" [Repairs & Alterations] definitions, which one is applicable to whom?

•The definition found in 14 CFR Part 1.1 is for the FAA, and those with whom intend to seek FAA Engineering approval!

• The definition found in 14 CFR 43 Appendix A, is for FAA Air Certificated Facilities who plan to use their existing "Limited" authority to perform "Non-book repairs", without any further FAA intervention or review before the return of the component or product to airworthiness, and release for safe return to service! [No FAA preview because they consider it [acceptable].

• Orders and Advisories: 8110.42C, 8110.37D, AC 33.2B, AC 33 draft XX Repair, AC 43 – 18 chg 1, AC 23.1309.1c, 25.1309.1A, is guidance for FAA and designees to use for findings to comply with 14 CFR 21.93, 21.95 Airworthiness requirements..

Define “Acceptable”

- **Anything the FAA considers to be a Industry Recognized and Published Standard**
  [14 CFR Part 1.1]

EXAMPLES OF ACCEPTABLE DATA:

- Military specifications & Standards for like articles
- US or International Stds [i.e. ISO, AMS, ASM, SAE, AWS, DIN]
- FAA Advisories, Orders, Directives
- Standard Practice Manual Data that is NOT contrary to TC ICA.
- FAA FSDO Field Approvals that are exactly like your action, and do not require ACO re-evaluation. You can request your FSDO-PMI to allow the use of that data for your application.
- FAA approved PAH data or supplemental ICA’s that are FAA approved
- Approvals granted by Foreign NAA’s who have a Bi-lateral MIP w/FAA
- And of course the data and action must be within your OPS!

AN ACCEPTABLE MEANS TO THE FAA

To Process "MINOR" Type Changes…..on a Part 33 Product!!

AC 33.2B Para 13. PROCESSING CHANGES IN TYPE DESIGN. (FAR Part 21, Subparts D and E).

a. Minor Changes. Section 21.95 applies to the approval of minor changes in type design. Such changes normally require only a drawing comparison to substantiate their airworthiness.

Typical examples of minor changes are included in the list which follows this paragraph. These changes may be approved by the applicant's appropriately authorized DER. An acceptable method of handling these changes includes submitting to FAA the engineering design change notices, where necessary, to fully describe the changes.

Major and Minor Design Changes [Continued]

From FAA AC 33.2B Para 13

(3) Increase in thickness, where the design permits itjtwithout adverse effects.

(4) Change to equivalent, or improved material, in minor parts.

(5) Improvements in heat treatments of parts, without reducing elongation of parts subjected to high stress.stress.

(6) Small changes in the design of non-critical parts of the engine.

(7) Improvements in the manufacturing, or processing of parts, without reducing the material properties.

b. Major Changes. Section 21.97 applies to the approval of Major changes in the type design. To substantiate major changes to a certificated engine, substantiating data must be submitted.

NOTE: Typical examples of major changes are included in the list that follows. Acceptable substantiating data include, at least, technical data and drawings, together with reports of tests, when applicable..

Difference between Major Type Design, and Major Repair

••A Major Type Design means that your "Modification" will SIGNIFICANTLY impact, Form, Fit, Function, or IFCAW, which will impact any of the seven (7) features defined in 14 CFR 21.93

• A Major Type Design change will require a STC of the TC designed product! [14 CFR Part 21.95, 21.97]

• A Major Repair does not necessarily impact SIGNIFICANTLY "FORM, FIT, FUNCTION, and IFCAW of the the type design, it is then a "MINOR TYPE DESIGN" but a Major Repair! [14 CFR Part 1.1]

Therefore, a Major Type Change always requires an STC, a Major Repair or Alteration may not! Therefore, guidance of 8110.42B, states that all "MINOR" type certificate changes qualify under the requirements of "Modification, & Replacement" 14 CFR Part 21.303, & 21.305.

Definitions 1.1 & 21.93 side by side

- **21.93(a) In addition to changes in type design specified in paragraph (b) of this section, changes in type design are classified as minor and major. A "minor change" is one that has no appreciable effect on the weight, balance, structural strength, reliability, operational characteristics, or other characteristics affecting the airworthiness of the product. All other changes are "major changes" (except as provided in paragraph (b) of this section).**

- **Major Repair Means: (1) That, if improperly done, might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or(2) That is not done according to accepted practices or cannot be done by elementary operations.**

The subtlety is 21.93 says "NO appreciable effect" = ZERO
1.1 say "Might appreciable affect" = Will have

What about “Might”?

Roget's New Millennium™ Thesaurus –

Notes: may is more optimistic than **might**, **might** may carries the idea of permission while might suggests likelihood…. So reworded 1.1 says:

- **Major Repair Means: (1) That, if improperly done, there is a likelihood of a measurable affect on weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or(2) That is not done according to accepted practices or cannot be done by elementary operations.**

Now let's look at part (2) of 14 CFR Part 1.1

- **or(2) That is not done according to accepted practices or cannot be done by elementary operations.**
- **Accepted practices: SPM's, PAH approved data, AD's, AC's, Orders, SB's, FAA Field Approvals, Published Industry standards [ieie Mil Spec's, SAE, AMS etc.]**
- **Elementary operations: AC 120-77 m. Manufacturer's Service Documents. Publications by a design approval holder that provide acceptable methods, techniques, and practices for performing maintenance, preventive maintenance, and alterations. They include, but are not limited to, maintenance manuals, restoration/overhaul manuals, ICAs, Component Maintenance Manuals, Structural Repair Manuals, service bulletins, letters, or other similar information. Or NOT found in 14 CFR Part 43 appendix A.**
- **Keep in mind that you may find data to be ACCEPTABLE, but it rises to MAJOR repair or Alteration and NOW REQUIRES FAA APPROVAL vsvs ACCEPTANCE because it's NOT ELEMENTARY!**
- **SO When in Doubt ASK your FAA, or Designee before you release**

The "*Done*" word!

if improperly **done**,…..

If What is done?

If you're a DER, or DOA/ODA the "Done" **means the design**!

If you're the repair facility the "Done" **is the performing**, the **execution of the repair!**

In other words if the Repair design is done wrong, you will never do a safe repair no matter how well you [the repair station] do it!

If the design is done correct, but the repair facility performs it wrong [DONE], you will have an unsafe repair! So we need to look at whom is "complying" to the phrase "done"!

Other FAA Guidance

- 8110.42C "Modification and Replacement Parts" uses the phrase

d. Safety Assessment. Expect the applicant to submit a failure mode and effects assessment to support classification of the proposed part as either critical or non-critical.

This assessment provides at a minimum::

(1) A qualitative assessment of failure modes and effects, which notes the part criticality and considers:

- Effect of characteristics, processes, maintenance procedures, or inspections when there's a failure, omission, or nonconformance; and
- Effect of operating outside the part application or intended environment.

(2) Effect of part failure on the next higher assembly and its performance.

(3) Effect on the product and its performance if the next higher assembly fails.

So every type change [minor], must have a safety assessment performed, and for repairs that means these three (3) items are very relevant because the word .."Effect" is now linked to "Appreciable" in both CFR 1.1, and CFR 21.93

Can 14 CFR 145 facility Produce their own replacement parts?

Yes! If a FAA Air certificated facility has FAA approved data, in compliance with FAA Order 8900.1, 8300.13 and 8110.42C, AC 43 –18 Chg 1, they can produce their own parts as long as they consume these parts into the approved repair [NHA], and these produced sub parts are NOT offered for sale over the counter!counter!

In other words, you must meet all the test & data requirements of 8110.42C, but you need not have a PMA…..

One Example of a DER Repair with a Locally Mfg Part

1.1. A Nozzle SPAD is locally produced, by the repair facility.

2.2. The damaged area is cut out

3.3. The new SPAD is welded in place

4.4. The SPAD & weld is blended

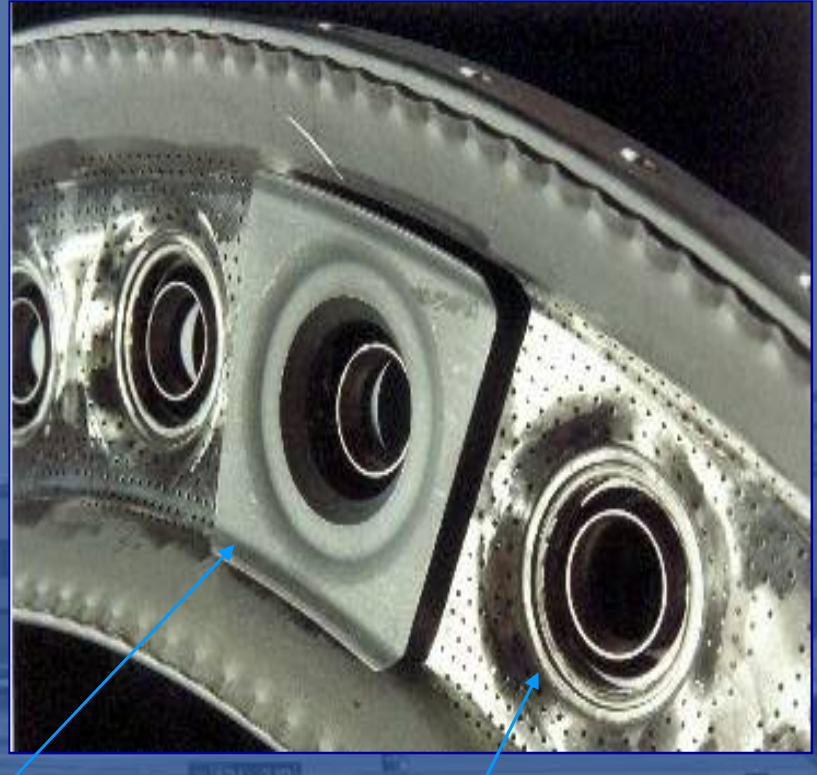
5.5. The weld repair is NDT Inspected

6.6. The new SPAD is laser drilled for air cooling holes.

7.7. The Combustor dome is air flowed and re-inspected to OEM Stds.

8.8. Repair data is FAA DER approved, in accordance to AC 43-18 Chg 1

A Non-book repair of a Combustor



NON-Book DER Repairs - Continued

- Flange Replacement & Guide Fin Replacement

Fab by Maintenance

Missing Spar detail

What Rules Apply to MRP's?MRP's?

Much depends on WHO is accomplishing the Modification Replacement Part tasks!

••Repair Stations: 14 CFR Part(s) 43.13, CFR Part(s) 21.303, 21.305, and the specific product design rules [i.e. Part 25, Part 33 etc.], Order(s) 8110.4C, 8110.42C, 8110.37D, 8900.1, 8100.13, 8110.54, AC 33.2b,AC 43 –18 Chg 1, AC 33 draft XX Repair, AC 23.1309-1C, AC 25.1309-1A, AC 25.571, AC 33.753B, AC 20-62D, & AC 120-77]77]

How many ways can you Legally do Replace a component?

How many ways does the FAA allow to approve "MRP's" for installation into Type Certificated Products [Airplane, Engine, Propellers] ?

Approved Parts by Federal Aviation RegulationsRegulations

Part 21

Certification Procedures for
Products and Parts

Defines Defines

Eight (8) ways to obtain new parts
that are considered to be approved,
plusplus
Three (3) special conditions

A total of 11 ways..

New Approved Parts

1. FAR §21.123
   - Production Under Type Certificate Only (TC)
     - Operate under TC only for 6 months unless extended by the Administrator.

2. FAR §21.125
   - Approved Production Inspection System (APIS)
     - After 6 months TC holder obtains (APIS) Ref. §21.123 (c)

3. FAR §21.131
   - Production Certificate (PC)
     - Eligibility for PC Ref. FAR §21.133
       - a. Current TC holder
       - b. Rights to a TC under Licensing Agreement
       - c. Supplement Type Certificate (STC) holder

New Approved Parts

4. FAR §21.303 (h)(4)

Standard Part

- A part manufactured in complete compliance with an established industry or U.S.government specification which includes design, manufacturing, and uniform identification requirements. The specification must include all information necessary to produce and conform the part and be published so that any party may manufacture the part. Examples include but are not limited to National Aerospace Standards (AS), and Military Standards (MS).

Definition per A/C 20-62D
Order 8110.42C
Order 8120.10A

5. FAR §21.303 (b)(2)

Parts produced by Owner Operator

- The Owner-Operator controls the design, manufacture, or quality of parts produced. These parts may only be sold to the Owner-Operator who has approved the parts.

New Approved Parts

6. FAR 21.502

Imported Parts

- Produced in accordance with an Approval under a Bilateral Airworthiness Agreement (BAA).

7. FAR 21.601

Technical Standard Order (TSO)(TSO)

- Parts produced in accordance with a (TSO) authorization issued by the Administrator.

8. FAR 21.303 (a)

Replacement and Modification Parts

- Parts Manufacturer Approval (PMA)
- Order 8110.42C - establishes procedures for the evaluation and approval of Parts Manufacturer Approval.

Special Conditions for Part Approval

99Parts sold prior to the issuance of a Type Certificate (Provisioning).(Provisioning).

- A manufacturer with a APIS or PC may ship replacement parts prior to the issuance of TC or STC provided the parts are segregated at their destination and identified as "Not for Revenue Service - Type Certificate Pending". Ref. Advisory Circular 21-32A.

10. FAR §§1.305 (d)

Approved in any other manner acceptable to the administrator.administrator.

Note: Parts which have been inspected and/or tested by appropriately certificated persons authorized to determine conformity to FAA -Approved Design Data may also be found to be acceptable for installation. Military Surplus Parts may fall under these conditions. AC 20-62D should be referred to for information regarding eligibility and traceability of parts.

Special Conditions for Part Approval

11. Repair Station Production of Replacement or Modification Parts.

- Parts manufactured by a Repair Station or other authorized person during alteration in accordance with a STC or Field Approval.

  If part is sold separately for someone else to install, the part then requires a PMA **Ref. Order**

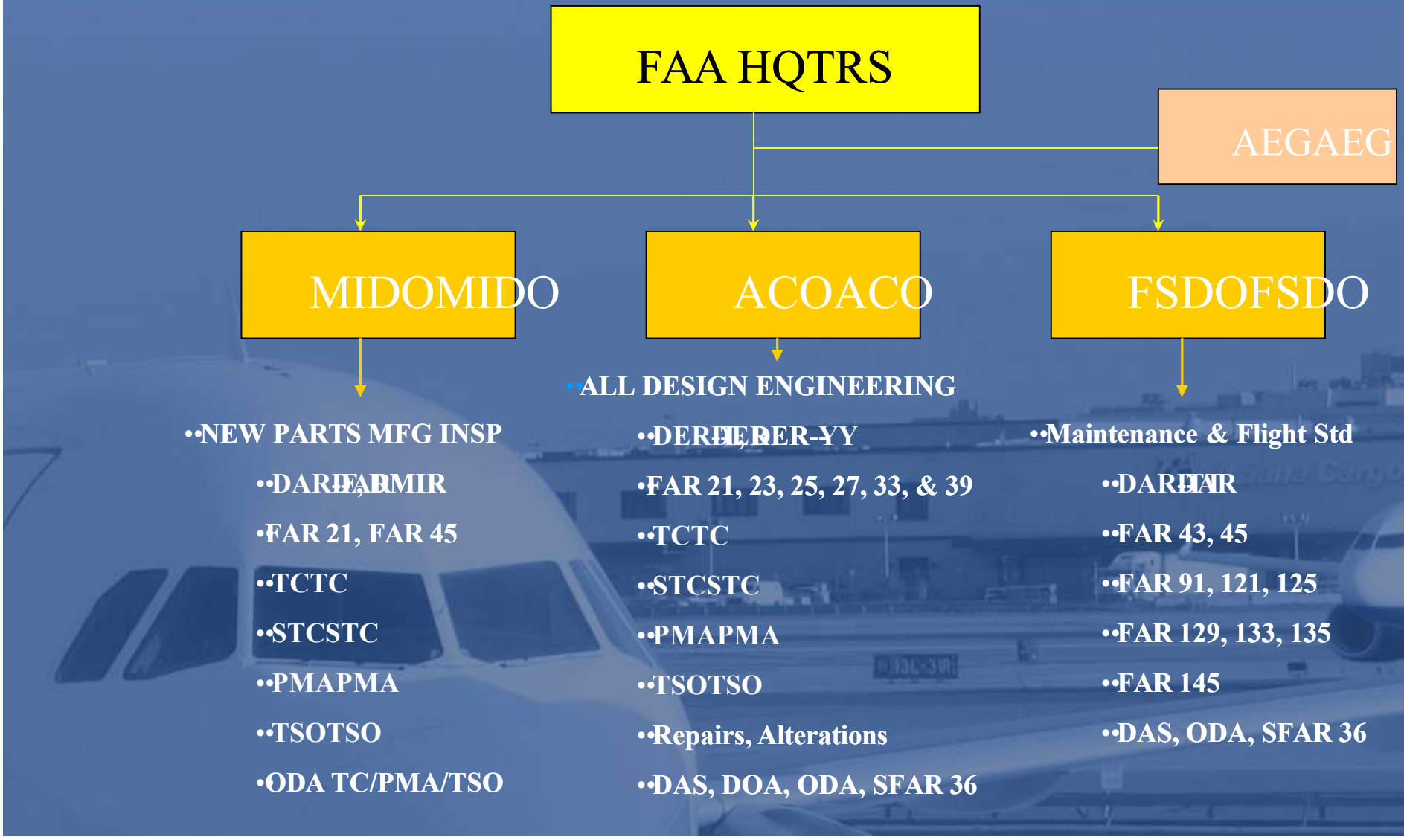
Order(s): 8900.1, 8110.37D

8110.42C, AC 43 –18 Chg 1

Who can approve Repairs & Alterations?

- **The FAA authorizes the following designees to approve various aspects of "Design"** [Compliance], **and Performance** [Conformity].
  - Delegated Alteration Stations [DAS] Both Design Compliance & Conformity.
  - Design Organization Authorization [DOA] design aspects only
  - Organizational Design Authority [ODA-M/R] Both Design Compliance & Conformity.
  - Designated Engineering Representatives [DER] [spl. delegations] design aspects only.
  - FAA Aircraft Certification Offices – Design Aspects only
  - FAA Flight Standards District Office – [Certain Field Approvals] Conformity Only
  - Inspection Authorization [IA] Major Repairs – Conformity only
  - ODAR-T/DAR-T w/proper function codes – Conformity only
  - Under certain conditions – Foreign NAA's and their Designees who have Bi-laterals with USA/FAA

What Branches of The FAA are Responsible for various MRP activities?activities?



U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

SUBJECT: FABRICATION OF AIRCRAFT PARTS BY MAINTENANCE PERSONNEL

Date: 3/24/06
Initiated By: AF

1. PURPOSE.

a. The purpose of this advisory circular (AC) is to ensure that parts maintenance and alteration have an equivalent level of safety to those pa original design holder's production certificate. This AC provides one m the requirements of Title 14 of the Code of Federal Regulations (14 CFR the design and fabrication of parts by persons performing maintenance a methods, techniques, and practices acceptable to the Administrator. As such parts fabrication and their implementation must be accomplished "i the condition of the aircraft, airframe, aircraft engine, propeller, or appli at least equal to its original or properly altered condition."

b. This AC is not mandatory and does not constitute a regulation. It and to outline one method of compliance with the rules. In lieu of follov the method prescribed herein, a person may elect to follow an alternative Federal Aviation Administration (FAA) finds the alternative method to b of complying with the applicable requirements of 14 CFR.

2. REGULATIONS AND GUIDANCE MATERIAL.

a. Regulations. Refer to the following regulations in 14 CFR gener satisfying or making a finding of compliance.

(1) Part 1, Definitions and Abbreviations.

(2) Part 21, Certification Procedures for Products and Parts.

(3) Part 23, Airworthiness Standards: Normal, Utility, Acrobatic Category Airplanes.

(4) Part 25, Airworthiness Standards: Transport Category Airpla

U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Fabrication of Aircraft Parts by Maintenance Personnel
Date: 2/29/08
AC No: 43-18
Initiated by: AFS-300
Change: 1

1. PURPOSE. This advisory circular (AC) has been revised to update AC 43-18, Fabrication of Aircraft Parts by Maintenance Personnel, dated March 24, 2006.

2. PRINCIPLE CHANGES. This change updates guidance, including all references related to Title 14 of the Code of Federal Regulations (14 CFR).

PAGE CONTROL CHART

Remove Pages	Dated	Insert Pages	Dated
1 thru 11	03/24/06	1 thru 11	2/29/08

ORIGINAL SIGNED BY
John M. Allen for

James J. Ballough
Director, Flight Standards Service

What about Repairs that will be used in EASA member states?

- This will **NOT** be an easy answer, since there is still many undefined guidelines being issued by EASA through "ED" Executive Directives, which have the force of rules in Europe!
- We will discuss what is being required by ED 2004-04-CF
- We will discuss FAA Order 8100.14(a)
- Bi-laterals
- New European Union Wide Bi-Lateral pending!

THE FAA & EASA ROAD MAP for DER REPAIR APPROVAL

Dominick DaCosta – FAA DER-T & FAA DAR-F

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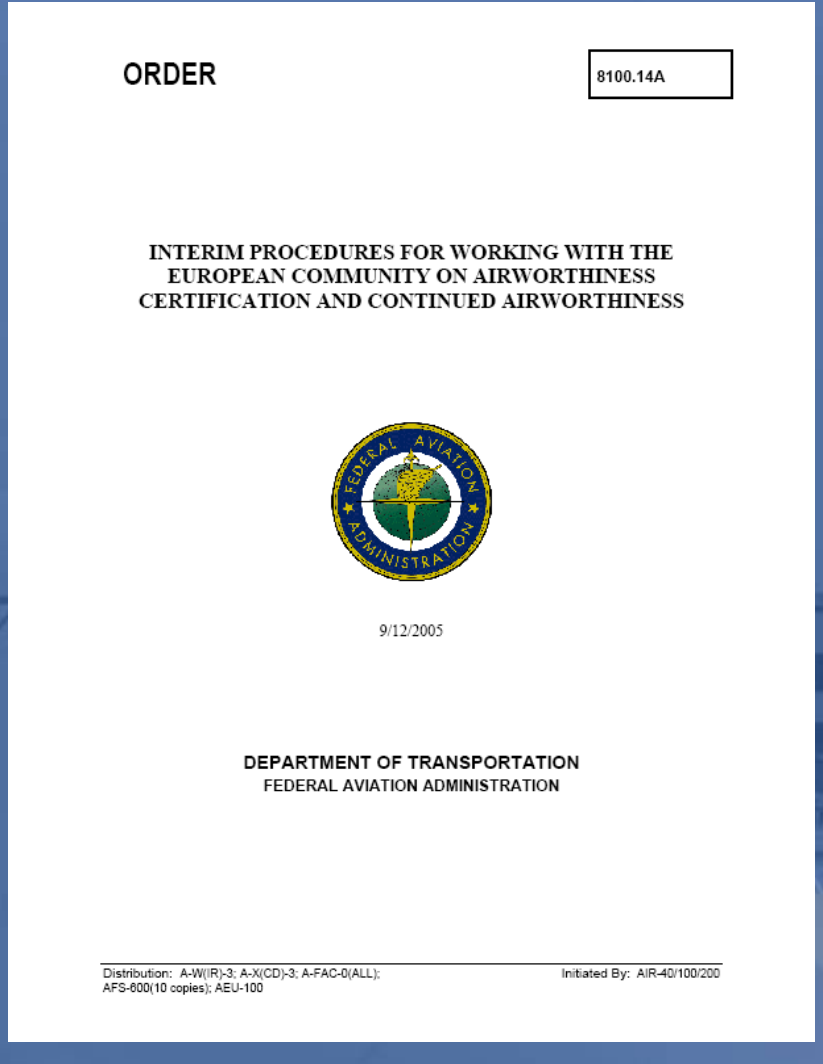
Lets look at the FAA 8100.14a



ORDER 8100.14A

INTERIM PROCEDURES FOR WORKING WITH THE EUROPEAN COMMUNITY ON AIRWORTHINESS CERTIFICATION AND CONTINUED AIRWORTHINESS

9/12/2005

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Distribution: A-W(IR)-3; A-X(CD)-3; A-FAC-0(ALL); AFS-600(10 copies); AEU-100

Initiated By: AIR-40/100/200

This order describes the procedures that Federal Aviation Administration (FAA) employees, designees, and delegations must follow when working with the European Community on the import or export of civil aeronautical products, parts, and appliances. This order addresses type, production, and airworthiness certification. It also addresses continued airworthiness.

On July 15, 2002, the European Parliament and the Council of the European Union (EU) adopted Regulation (EC) No 1592/2002 (Basic Regulation). It set common civil aviation rules in the EU and established a European Aviation Safety Agency (EASA). Effective September 28, 2003, EASA and the National Aviation Authorities (NAA) of EU Member States assumed their respective shared responsibilities for certificating and overseeing design, production, and maintenance of all civil aviation products in the EU.

EASA MIP-G

WHAT HAS CHANGED TO AFFECT THE APPROVAL STATUS OF FAA DER REPAIRS?

- EASA became the Aviation Authority for ALL European Member States Effective September 2003!
- The United States of America has NO EASA Bi-lateral covering ALL Member States.
- An Interim Agreement between EASA and USA/FAA issued under FAA Order 8100.14a, that defines certain agreements between the Airworthiness authorities until a European Union [EASA] Bi-lateral is agreed upon.
- EASA has issued several "Executive Decisions" to clarify EASA position on Airworthiness issues. In particular we will focus on one ED 2004-04-CF.
- EASA has allowed existing member states who have Bi-laterals to choose which method to operate under, either ED's or Bi-laterals.

FAA ORDER 8100.14a (Cont)

1-6. APPLICABILITY.

a. This order is intended primarily for ACOs, Directorate Standards Staffs, MIOs, MIDO/CMOs, and Flight Standards Offices that:

- Conduct type certification and validate design approvals;
- Oversee production and continued airworthiness; and
- Accept the import/export of products between the United States and the EU Member States.

b. This order ***addresses the significant differences*** in policy and procedures that are required by the ongoing changes in Europe.

1-7. RELATIONSHIP TO OTHER ORDERS ON BILATERAL ACTIVITIES.

This order takes precedence over existing policy and procedures on bilateral activities with EU Member States, unless it states otherwise. We will revise FAA orders, as appropriate, to include this order, or other appropriate requirements, after the United States concludes an applicable bilateral agreement with the European Community, hereafter referred to as the Community.

FAA Order 8100.14a (Cont)

(3) The main objectives of this change are to:

- Promote a high, uniform level of safety and environmental protection;
- Improve cost efficiency by not duplicating certification rules and procedures;
- Assist Member States in fulfilling their International Civil Aviation Organization (ICAO) obligations;
- Promote European positions in the field of aviation safety rules
- and standards; and
- Make it easier for products, services, and persons to circulate in the EU.

FAA Order 8100.14a (Cont)

EU, EASA, & NAA Responsibilities

FIGURE 2-1. RULEMAKING AND POLICY RESPONSIBILITIES	
EU Parliament and Council	Adopt Community regulations and establish essential requirements (for example, Basic Regulation (EC) No 1592/2002).
EU Commission	Drafts Amendments to Basic Regulation 1592/2002 and related essential requirements based on opinions from EASA. The EU Council and Parliament consider these drafts through their co-decision process. Issues Commission regulations (which are implementing rules, such as parts 21, 145) to implement the essential requirements of the Basic Regulation. Issues grants or denials of exemptions to the essential requirements.
EASA	Drafts and issues all certification specifications (including airworthiness codes and AMC) and guidance material (including maintenance). Drafts opinions for Amendments to Basic Regulation 1592/2002 and related essential requirements. EASA forwards these opinions to the EU Commission. Drafts opinions on implementing rules for the Commission to consider. Issues special conditions and equivalent safety findings for product certification. Drafts grants or denials of exemptions to the essential requirements for the Commission to consider.
NAA	Recommends regulation and policy changes to EASA. Acts as technical advisor when requested by EASA or the Commission.

FAA Order 8100.14a (Cont)

e. Acceptance of Existing Approved Products, Parts, and Appliances. The Basic Regulation provides for the acceptance by all EU Member States of existing aviation products, parts, and appliances already approved by any one EU Member State and of future products, parts, and appliances approved by EASA. U.S. products, parts, and appliances already accepted (except for restricted category products) by any EU Member State may be exported throughout the EU.

The Importance of the above can be better understood if we see what EASA states regarding "Level playing field" between member states……

EASA has allowed the following for Rules to b applicable to Replacement & Modified Parts.

The Agency therefore allows the most flexible Bi-lateral provisions to be applicable for member states who have existing Bi-laterals.....

The Agency reviewed all the existing agreements between Member States NAA's and the FAA. The result of this comparison showed that all contain similar provisions related to the acceptance of PMAs with few variations. The Agency decided therefore to apply the most flexible and favourable provisions so as not to affect acquired rights. As a consequence:

All PMA for US type certificated products are accepted without conditions;
PMA for non-US type certificated products are accepted under the following conditions:
- they are not a "critical component"; or
- they have been produced under a licensing agreement; or
- they have received a specific CAA (now EASA) approval (minor change approval or STC)

In all other cases the Agency shall examine the case and issue an approval in accordance with Part 21 Subparts D and E taking into account the validation provisions of existing agreements.

This is not only for PMA , but ALL "Replacement & Modification Parts"

Since EASA Part 21 Subpart D and E are noted.

EASA approval of Repairs & Exceptions

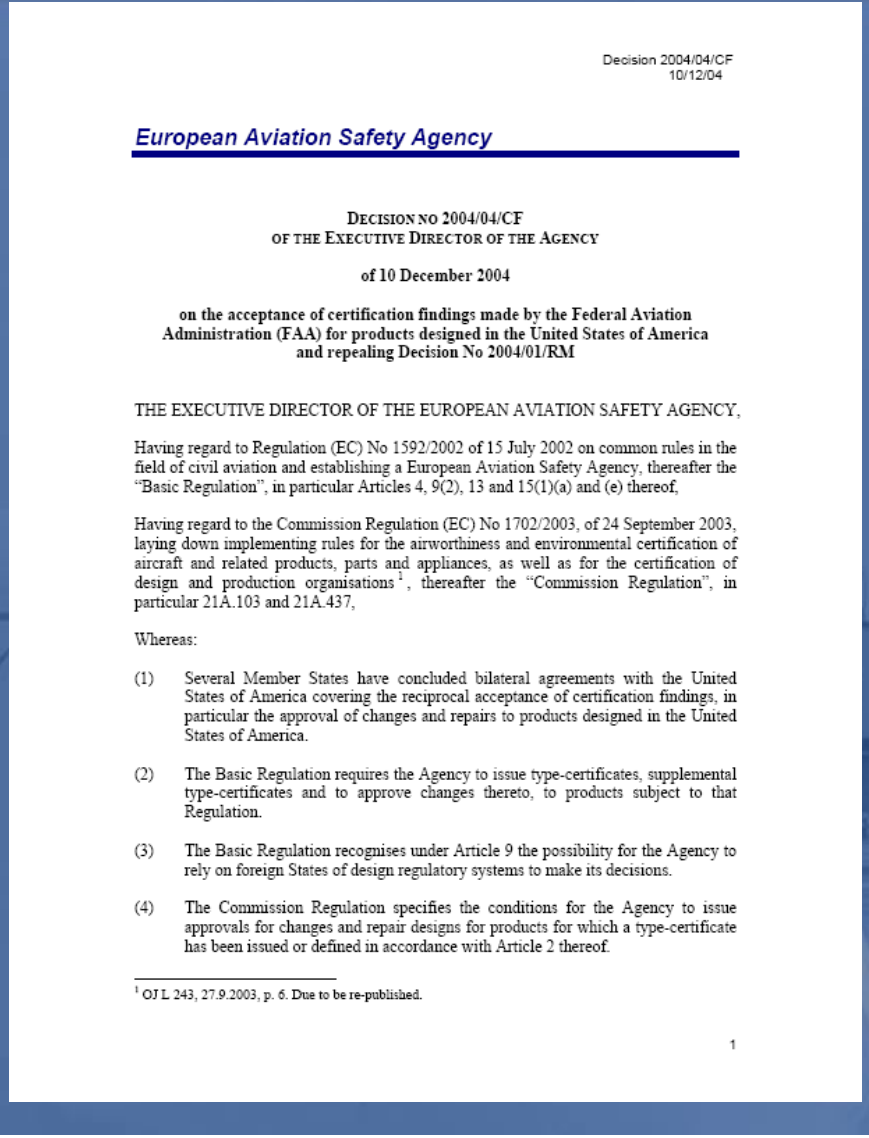
Certification - Design Approvals

REPAIR DESIGN

Repair design approvals are issued in accordance with **Part 21, Section A, Subpart M**.

Exceptions:
This does not apply to repair designs approved under the conditions described in bilateral agreements or working arrangements between EASA and foreign Aviation Authority (see **International Working Arrangements**).
For guidance on the EASA approval status/applicable approval processes for repair design data developed by US organisations/persons for use on EU-registered aircraft

EASA ED 2004-04-CF



Decision 2004/04/CF
10/12/04

European Aviation Safety Agency

DECISION NO 2004/04/CF
OF THE EXECUTIVE DIRECTOR OF THE AGENCY

of 10 December 2004

on the acceptance of certification findings made by the Federal Aviation Administration (FAA) for products designed in the United States of America and repealing Decision No 2004/01/RM

THE EXECUTIVE DIRECTOR OF THE EUROPEAN AVIATION SAFETY AGENCY,

Having regard to Regulation (EC) No 1592/2002 of 15 July 2002 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, thereafter the "Basic Regulation", in particular Articles 4, 9(2), 13 and 15(1)(a) and (e) thereof,

Having regard to the Commission Regulation (EC) No 1702/2003, of 24 September 2003, laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations [1], thereafter the "Commission Regulation", in particular 21A.103 and 21A.437,

Whereas:

(1) Several Member States have concluded bilateral agreements with the United States of America covering the reciprocal acceptance of certification findings, in particular the approval of changes and repairs to products designed in the United States of America.

(2) The Basic Regulation requires the Agency to issue type-certificates, supplemental type-certificates and to approve changes thereto, to products subject to that Regulation.

(3) The Basic Regulation recognises under Article 9 the possibility for the Agency to rely on foreign States of design regulatory systems to make its decisions.

(4) The Commission Regulation specifies the conditions for the Agency to issue approvals for changes and repair designs for products for which a type-certificate has been issued or defined in accordance with Article 2 thereof.

[1] OJ L 243, 27.9.2003, p. 6. Due to be re-published.

1

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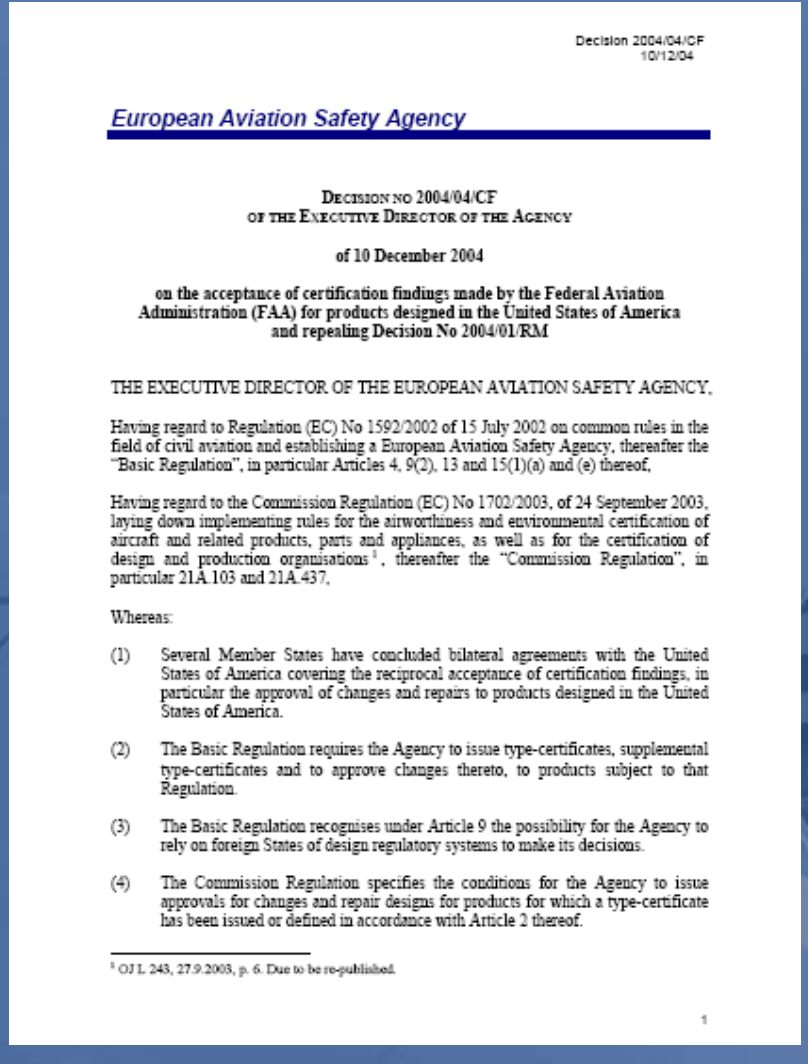
EASA ED 2004-04-CF



Decision 2004/04/CF
10/12/04

European Aviation Safety Agency

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[1] OJ L 243, 27.9.2003, p. 6. Due to be re-published.

1

(3) The Basic Regulation recognizes under Article 9 the possibility for the Agency to rely on foreign States of design regulatory systems to make its decisions.decisions.

(4) The Commission Regulation specifies the conditions for the Agency to issue approvals for changes and repair designs for products for which a type--certificate has been issued or defined in accordance with Article 2 thereof.

(5) When exercising its certification tasks, the Agency is bound by existing agreements between Member States and the United States of America, in particular their provisions related to the procedures to be followed for the approval of changes and repairs and the update of type designs.

EASA Approval of Repairs by others [Not TC/STC/TSO/PMA holders.

Article 3

Approval of minor changes and repairs designed by other legal or natural persons

An approval is hereby issued by the Agency to a legal or natural person under the regulatory oversight of the FAA for a minor change or a minor repair design of a product for which the United States of America is State of design whose:

(a) type-certificate:certificate:

(i) has been issued by the Agency; or

(ii) is deemed to have been issued in accordance with article 2.3(a) of the Commission Regulation; or

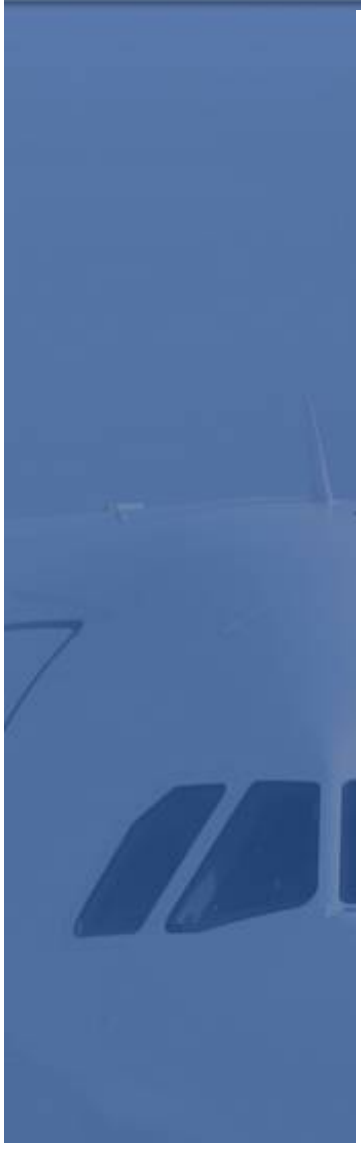
(iii) has been determined by the Agency in accordance with article 2.3(c) of the Commission Regulation,

(b) supplemental type-certificate:certificate:

(i) has been issued by the Agency; or

(ii) is deemed to have been approved under the provisions of article 2.3(b) of the Commission Regulation, when such change or repair design has been approved by the FAA in accordance with the procedures of an agreement in force between a Member State and the United States of America.

New ED 2007-01-C
Which Amends Article 3 [ED 2004-04-CF only]



European Aviation Safety Agency

DECISION NO 2007/001/C
OF THE EXECUTIVE DIRECTOR OF THE AGENCY

of 9 March 2007

amending Decision No 2004/04/CF of 10 December 2004 on the acceptance of certification findings made by the Federal Aviation Administration (FAA) for products designed in the United States of America

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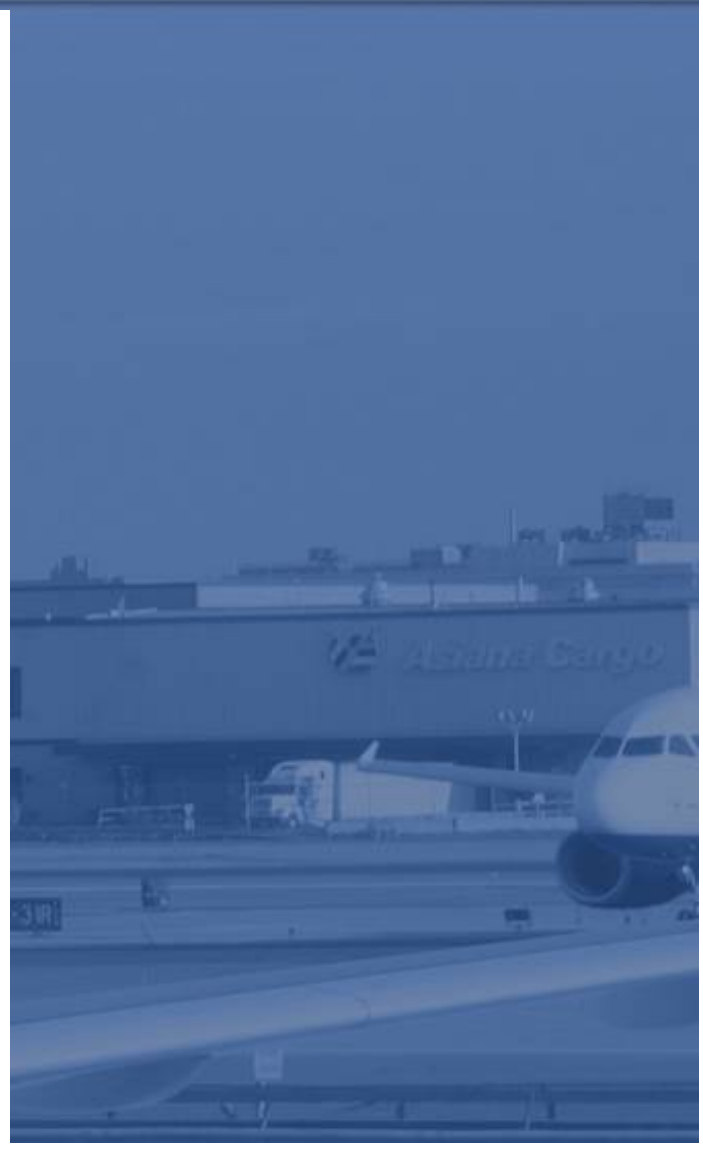
Whereas:

(1) The Agency and the Federal Aviation Administration of the United States of America have exchanged letters on 8/11/2006 and 11/01/2007 with the view to extend the scope of the existing agreements between Member States and the United States of America to facilitate the approval of repair design data.

(2) Decision No 2004/04/CF of the Executive Director of the Agency of 10 December 2004 on the acceptance certification findings made by the Federal Aviation Administration (FAA) for products designed in the United States of America (the Decision) needs to be amended to reflect this development.

HAS DECIDED:

[1] OJ L 243, 27.9.2003, p. 6. Due to be re-published.



EASA Matrix on Repair Approvals

Repair design data developed by U.S. organisations/persons for use on EU-registered aircraft and related articles	
Origin and Nature	*EASA Approval Status*
ALL REPAIR DESIGN DATA FOR US STATE OF DESIGN PRODUCTS, from: a. TC Holder, for their own products b. STC Holder, for their own STCs c. Suppliers to TC and STC Holders, developing data under TC or STC Holder's systems	APPROVED by ED Decision 2004/04/CF. The Decision represents an approval in itself for each individual case it describes. Reference to this approval shall be made in the release documents.
REPAIR DESIGN DATA FOR US STATE OF DESIGN PRODUCTS[1] - MINOR FAA, from: d. Other than a, b, c above when determined to be acceptable data for use as minor repair data and released by a FAR 145 organisation located outside the EU[2].	APPROVED by ED Decision 2004/04/CF. The Decision represents an approval in itself for each individual case it describes. Reference to this approval shall be made in the release documents.
REPAIR DESIGN DATA FOR US STATE OF DESIGN PRODUCTS[1] - **MAJOR FAA**, from: e. Other than a, b, c above	EASA approval required. See process 1, below.
ALL REPAIR DESIGN DATA FOR NON-U.S. STATE OF DESIGN PRODUCTS, from: f. Any US organisation/person, except suppliers to EU TC or STC Holders, developing data under EU TC or STC Holder's systems	EASA approval required. See process 2, below.
ALL REPAIR DESIGN DATA FOR EU STATE OF DESIGN PRODUCTS, from: g. US suppliers to EU TC or STC Holders, developing data under EU TC or STC Holder's systems	Approvals granted through TC or STC Holders' DOA, under EASA Regulations (Part 21)

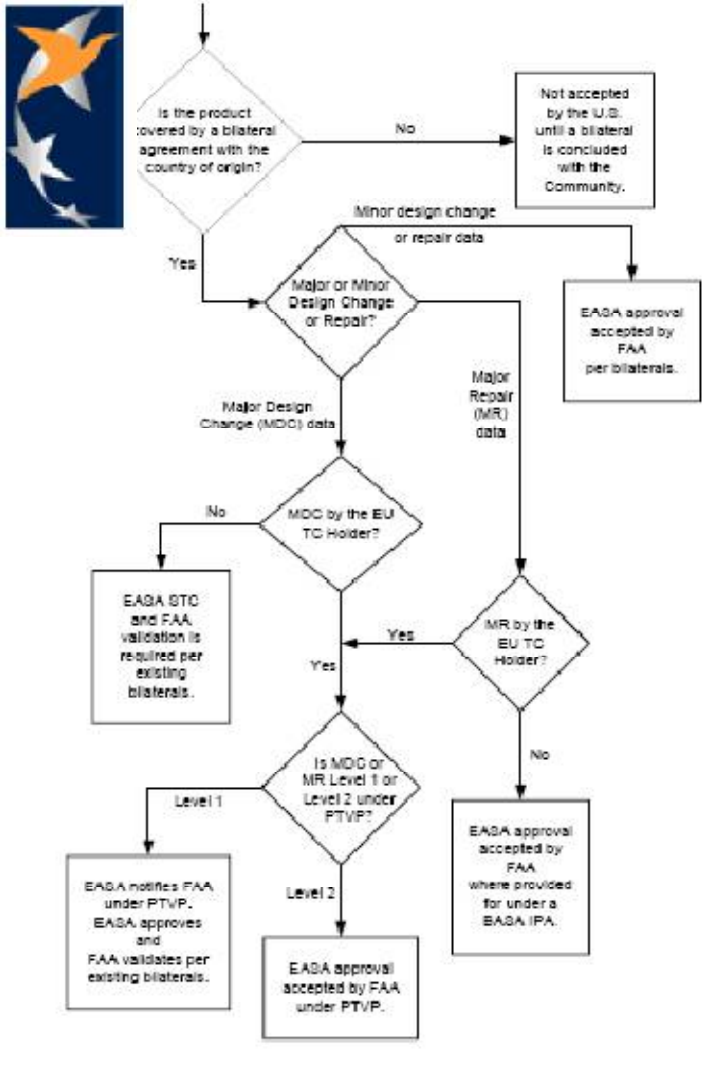
[1] Including CFM International engines, except for repairs on critical parts
[2] These repair data are not considered stand alone design approvals for use on other EU-registered aircraft. An EU company cannot declare that acceptable data under 14CFR 43 may be used on an EU-registered aircraft. Such data must be approved by EASA or under an EASA DOA for use by a maintenance organisation located in Europe.

EASA approval processes[3]	
Process 1 *(Major FAA repair design data on US State of Design products, not approved by ED Decision 2004/04/CF)*	*Process 2* *(ALL US repair design data for non-US State of Design Products not approved under EU TC or STC Holders' DOA systems)*
1. Submitted to EASA with EASA Form 31, including evidence of FAA approval and all other data required. The evidence of FAA approval shall be an ACO letter or evidence of a designee approval (e.g., IDER signed FAA form 8110-3 or DOA-approved 8100-9.) For a multi-discipline repair, the 8110-3/8100-9 should have the following statement in the "Purpose of Data" block (Reference FAA Order 8110.37C Paragraph 611g): "This form does constitute FAA approval of all the engineering design data necessary for substantiation of compliance to necessary requirements for the entire alteration/repair". If such evidence is not available, EASA may conduct a full certification of the repair data (see process 2).	1. Application to EASA with: - EASA Form 31 [MAJOR EASA] - EASA Form 32 [MINOR EASA] including all data required to be submitted with the form (see details in the form.)
2. EASA verification[4] that the data have been approved under FAA system in accordance with the appropriate procedures, defined in any existing bilateral agreement between US and EU countries[5]. Data without evidence of appropriate FAA approval will be rejected by EASA.	2. EASA assessment in accordance with Part 21, Subpart M. **Note:** The demonstration of capability required for the approval of major repair design is established: 1- either by the approval of the repair design under FAA's system, in accordance with Commission Regulation 1702/2003, article 3.2[6] 2- or, in the absence of an FAA approval of the major repair design, by a DOA or Alternative procedures to DOA to be issued by EASA in accordance with Part 21
3. EASA approval statement sent to the applicant.	3. EASA approval statement sent to the applicant.

[3] These processes are subject to the EU Regulation 488/2005 (Fees & Charges Regulation)
[4] Verification has for its objective to check the substantiating information of an FAA approval but not to conduct additional certification/validation
[5] The Agency is bound by any such agreement notwithstanding an aircraft's registration.
[6] EASA is accepting the US regulatory system as equivalent to the concept of demonstration of capability required from EU design organizations. However, DOA applications from US companies could be accepted, when considered appropriate.

Design Changes to EU S.O.D. Imported into USA

FIGURE 3-1. DESIGN CHANGES FOR EU PRODUCTS IMPORTED INTO THE U.S.
(NOTE: Restricted Category Aircraft are handled on a case-by-case basis)



Repair data approved by JAA, or NAA Prior to EASA inception still valid?

(5) STCs and Repair Data.

(a) Under transfer requirements in Commission Regulation Article 2, the Community will continue to accept, without further showing, existing STCs and repair data accepted in the EU before EASA became operational. They will accept the STCs and repair data as long as an NAA issued a design approval. The U.S. company should have proof of any prior approval or acceptance within the EU.

(b) Certain ***exceptions*** to the EU grandfather policy follow:

1. Some EU Member States have accepted U.S. STCs, although an NAA never issued its validation STC or "certificate." EASA will need to review these STCs for their applicability, documentation, and possible validation for future applications.

2. Some EU Member States have accepted repairs or alterations on U.S.-manufactured aircraft on their registry, although a Member State did not give the aircraft a corresponding design approval. Those repairs and alterations include ones that are not part of the manufacturer's service information accepted under the bilaterals (such as Instructions for Continued Airworthiness, service bulletins), or those that a DOA or other appropriately rated JAA approved organization did not develop. EASA will need to review any such repairs and alterations before they can be accepted for future application on EU-registered aircraft.

Regulatory Harmony

(3) Major Repair Data Developed by Other Than the TC Holder. Major repair data must first be approved per FAA Order 8110.4. Under Executive Director Decision 2004/04/CF, EASA will not automatically accept these data and will review the repair data in accordance with Part 21, Subpart M prior to issuing an EASA approval. The FAA may work directly with the RP for the product affected by the repair in order to facilitate EASA's approval.

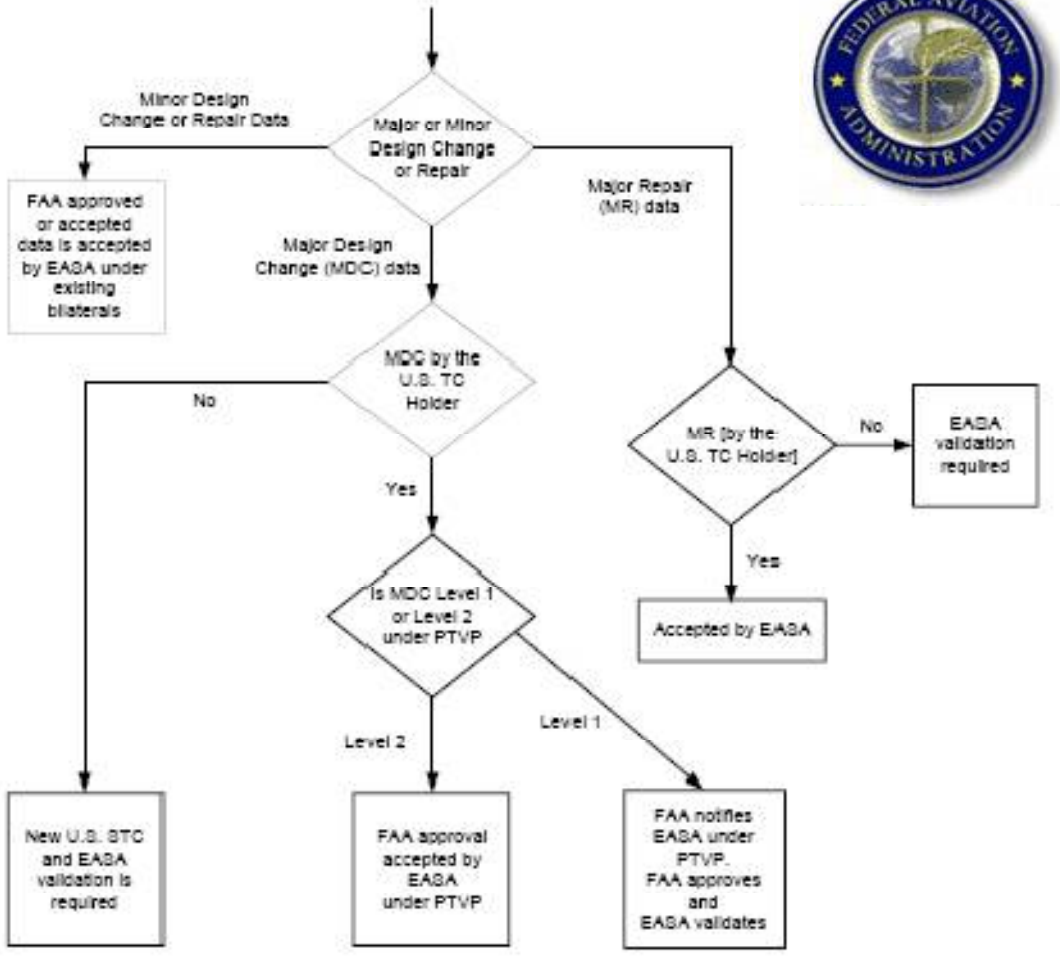
(4) Minor Design Changes and Minor Repair Data Developed by Either the TC Holder or Other Than the TC Holder. EASA accepts minor design changes and minor repair data that are FAA accepted under the U.S. system for U.S. products.

NOTE: NOTE: Both FAA Order 8100.14a & EASA ED 2004-04-CF agree, except ED 2004-04-CF gives member states the option to utilize existing Bi-laterals which are more "FLEXIBLE" in its application to this rule. [Ref to Whereas: 1, & 5, plus FAQ EASA web site.]

FAA FLOW CHART FOR USA S.O.D. going to EU

FIGURE 4-2. DATA FOR DESIGN CHANGES AND REPAIRS FOR U.S. PRODUCTS EXPORTED TO THE EU

(NOTE: Restricted Category Aircraft are handled on a case-by-case basis)



Therefore

- Major Repair but Minor Type Changes by:
  - TC holder ~ FAA Approved = EASA Approval
  - STC holder ~ FAA Approved = EASA Approval
  - TC/STC Licensee or Assist from ~ FAA Approved = EASA Appr
  - Not TC/STC/Licensee but you have FAA approval ~ you need to get that FAA/DER approval validated per Process 1.
- Minor Repairs by:
  - TC/STC/Licensee ~ FAA Approved or Accepted = EASA Appr
  - Not TC/STC/Licensee ~ You are a Maint Organisation performing to Part 43, and either have acceptable data or FAA Approved Data [DER] = EASA approval.
  - Not a Maintenance Org or it is a 3rd Country S.O.D. product then you need EASA approval use process 2.

FAA to EASA repair review flow chart Per ED-2004-04FCF

REPAIR ON A US TC Product (S.O.D. USA)

W/ Foreign Reg. EASA & No Bi-lateral

Major

NON

1. TC-Minor Type Change, but Major Repair & your not under Article 1, or 2 per ED, Submit to EASA to Validate FAA Approval EASA Form 32

Or If Minor TC/Minor Repair and you're a FAR 145, working under 43 rules EASA will accept FAA/FSDO/DER

YES

TC/STC Holder

YES

TC-MCJC-MCL2

Or Less OK to Accept FAA Approval, No EASA Validation required

NON

TC-MCJC-MCL2

Or Less Submit to EASA to Accept FAA Approval EASA Form 3131

Reference: EASA Rule Part-M, & EASA Part 21, sub part-M & ED 2004-04FCF

EASA ED 2004-04 CF
Article 3

Article 3

Approval of minor changes and repairs designed by other legal or natural persons

An approval is hereby issued by the Agency to a legal or natural person under the regulatory oversight of the FAA for a minor change or a minor repair design of a product for which the United States of America is State of design whose:

(a) type-certificate:
- (i) has been issued by the Agency; or
- (ii) is deemed to have been issued in accordance with article 2.3(a) of the Commission Regulation; or
- (iii) has been determined by the Agency in accordance with article 2.3(c) of the Commission Regulation,

(b) supplemental type-certificate:
- (i) has been issued by the Agency; or
- (ii) is deemed to have been approved under the provisions of article 2.3(b) of the Commission Regulation,

WHO WE ARE
WHAT WE DO
DIRECTORATES
NEWS & EVENTS
CONTACTS

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Last Updated: 30/5/2005 23:18

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Rulemaking
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Quality & Standardisation
Environmental Protection
EASA Networking
Management Board
Careers
Procurement

Certification - Design Approvals

REPAIR DESIGN

Repair design approvals are issued in accordance with Part 21, Section A, Subpart M.

Exceptions:
This does not apply to changes approved under the conditions described in bilateral agreements or working arrangements between EASA and foreign Aviation Authority (see International Working Arrangements). Applications for new type certification must be sent to:

European Aviation Safety Agency (EASA)
Programmes Department
Applications and Certifications Manager
Postfach 10 11 53 (for letters only**)
D-50452 Köln
Germany
Fax: +49 221 89990 9505
Email: MajorChange-MajorRepair@easa.eu.int, or MinorChange-MinorRepair@easa.eu.int, as applicable

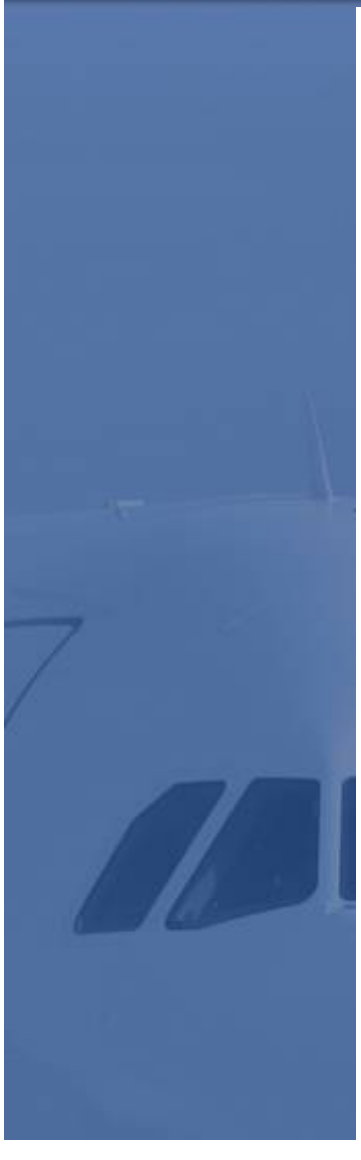
* Note:

- Please use the published application form.
- In case of a validation of a foreign repair design approval please attach a copy of this document.
- Please do not attach comprehensive data packages at this stage. You will receive further notice where such documents have to be sent.

** Note:
Postbox for letters only. Parcels and other larger consignments should be sent to: Ottoplatz 1 - 50679 K?

New ED 2007-01-C

Which Amends Article 3 [ED 2004-04-CF only]



European Aviation Safety Agency

DECISION NO 2007/001/C
OF THE EXECUTIVE DIRECTOR OF THE AGENCY

of 9 March 2007

amending Decision No 2004/04/CF of 10 December 2004 on the acceptance of certification findings made by the Federal Aviation Administration (FAA) for products designed in the United States of America

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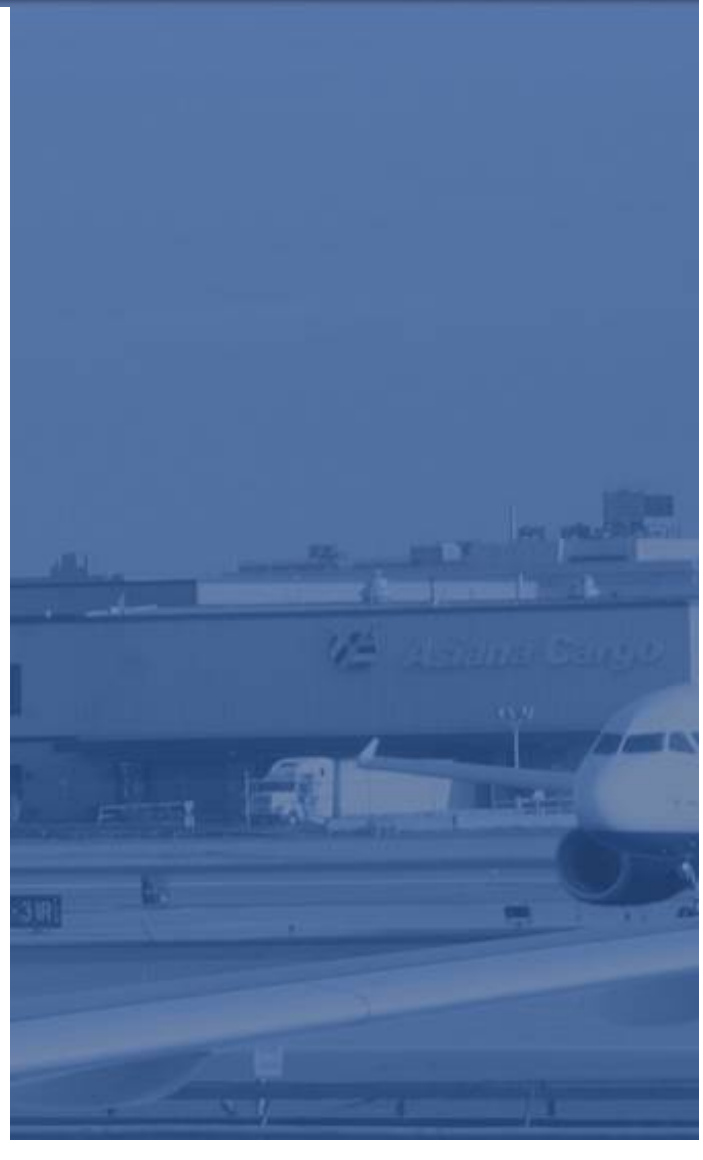
Whereas:

(1) The Agency and the Federal Aviation Administration of the United States of America have exchanged letters on 8/11/2006 and 11/01/2007 with the view to extend the scope of the existing agreements between Member States and the United States of America to facilitate the approval of repair design data.

(2) Decision No 2004/04/CF of the Executive Director of the Agency of 10 December 2004 on the acceptance certification findings made by the Federal Aviation Administration (FAA) for products designed in the United States of America (the Decision) needs to be amended to reflect this development.

HAS DECIDED:

[1] OJ L 243, 27.9.2003, p. 6. Due to be re-published.



EASA FORM 32 Minor/Minor – 31 Major

European Aviation Safety Agency
Application for Approval of
Minor Change / Minor Repair Design

1. Applicant	
1.1 Applicant's Reference *(if applicable)*	Internal Reference
1.2 Name	Name
1.3 Address *(registered business/postal address)*	Address
1.4 Contact Person	Contact Person
1.5 Telephone	Phone
1.6 Fax	Fax
1.7 E-mail	Email

2. Classification, Product Identification and Fees Information

☐ Minor Change ☐ Minor Repair

Applicants for minor changes and minor repairs will be charged in accordance with the Commission Regulation (EC) No. 488/2005 on the fees and charges levied by the European Aviation Safety Agency.

	Kind of Product / Equipment i.a.w. Fees and Charges Regulation	
☐	Large Aeroplane	CS-25
☐	Commuter Aeroplane	CS-23.A
☐	Small Aeroplane with MTOW between 2000kg and 5670kg	CS-23.B
☐	Small Aeroplane with MTOW less than 2000kg	CS-23.C

European Aviation Safety Agency
Application for Approval of
Minor Change / Minor Repair Design

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1.6 Fax	Fax
1.7 E-mail	Email

2. Classification, product identification and fees information

☐ Minor Change ☐ Minor Repair

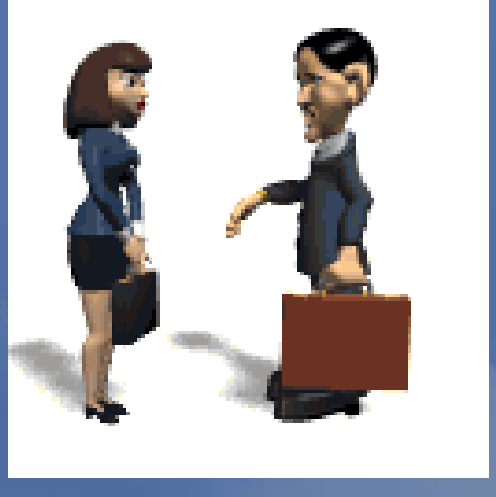
☐ Including Change to approved parts of Flight Manual (FM)

Applicants for minor changes and minor repairs will be charged in accordance with the Commission Regulation (EC) No. 488/2005 of 21 March 2005 on the fees and charges levied by the European Aviation Safety Agency (OJ L 081, 30 March 2005, p. 7), as amended by Commission Regulation (EC) No. 779/2006 of 24 May 2006 (OJ L 137, 25 May 2006, p.3).

In the case of withdrawal of the application, or other cases of interruption that qualify under Article 12(7) of Regulation 488/2005 as amended by Regulation 779/2006, EASA will recover the whole fixed fee up to an amount of 375 € to cover the administrative costs, or, in cases where the administrative costs clearly exceed that amount, the real administrative costs. In case the certification task gives rise to the payment of a variable part, the working hours already spent will be recovered as well. EASA will also recover specific costs and, if applicable, additional transport costs outside the territories of the EU Member States.

The DER's role with the International FSDO?FSDO?

FSDO with DER's?



- FAA Order 8110.37D Section 4-10, & 4-12 12 specifically requires that the FAA DER, make contact and alert the Cognizant FSDO, when working with a Foreign FAA 145 facility. [This can be done through the applicant, and would recommend DER follow-up] Also Order 8100.8
- The FSDO can and often does contact DER's ACO to determine DER's authority, and authorization.authorization.
- Will discuss data, and installation issues with the DER.DER.

Bilateral Airworthiness Agreement (BAA)

What is a BAA?

- BAA's are technical agreements signed at the government to government level. They are not trade agreements or treaties.reaties.
- The BAA is an agreement that provides cooperation between the FAA and CAA for the reciprocal acceptance of products appliances and parts for airworthiness in each country.country.
- Changes are being made to the BAA's. They are redesigned to Bilateral Aviation Safety Agreement (BASA).
- The BAA's stipulate the importing country receive appliances and parts meeting the part approval as defined in Part 21 of the Federal Aviation Regulations.

- Ref: AC 21.2J

Bilateral Airworthiness Agreement (BAA)

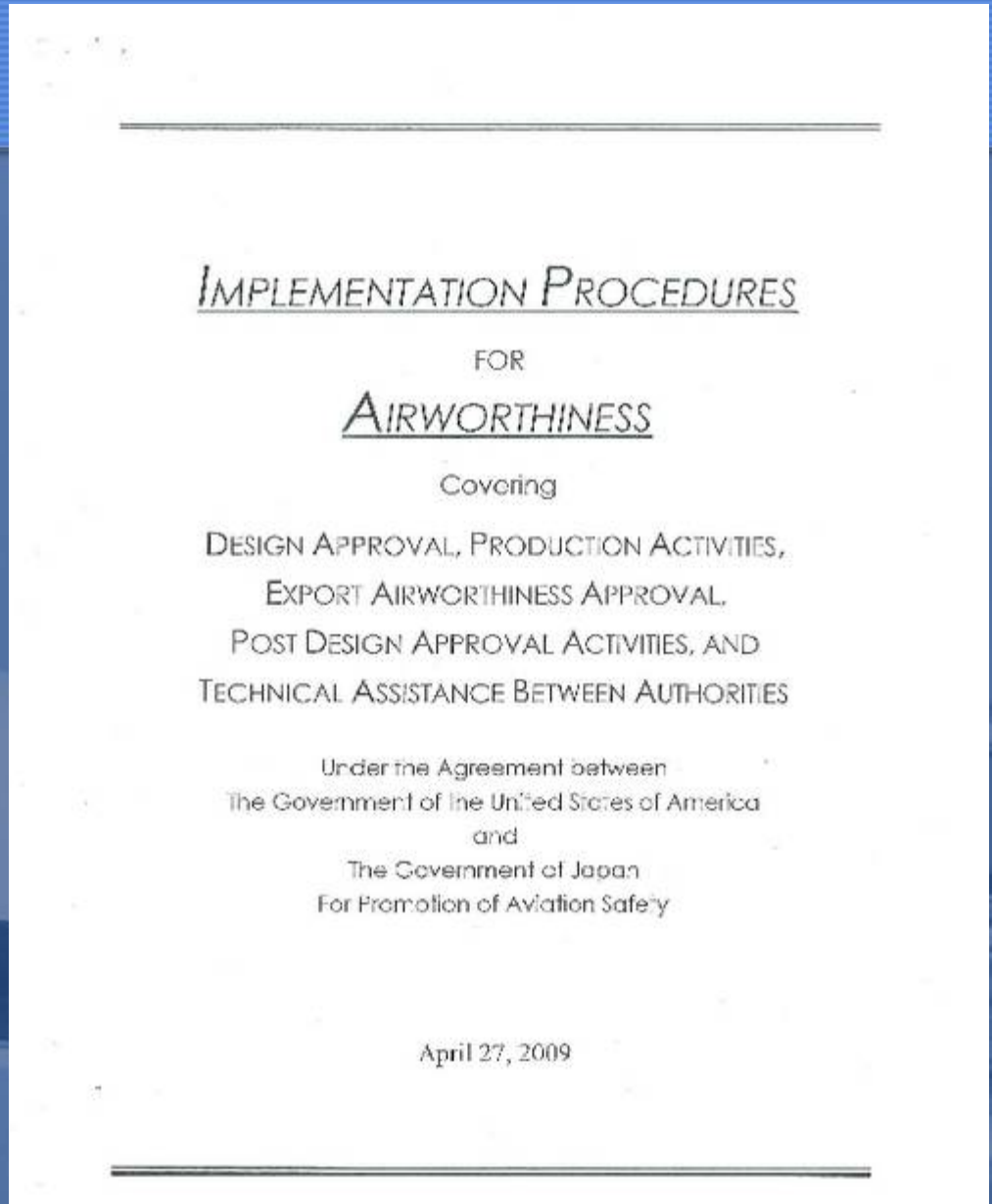
Countries with BAA

ArgentinaArgentina
AustraliaAustralia
AustriaAustria
BelgiumBelgium
BrazilBrazil
CanadaCanada
ChinaChina
Republic of Czech
DenmarkDenmark
Finland Finland
FranceFrance
GermanyGermany
IndonesiaIndonesia
IsraelIsrael
ItalyItaly
JapanJapan
The Netherlands
New Zealand
NorwayNorway
PolandPoland
RomaniaRomania
Singapore Singapore
SlovakiaSlovakia
South Africa
SpainSpain
SwedenSweden
Switzerland Switzerland
United Kingdom

28 Countries with BAA's

54 Countries issued "Special Requirements of Importing Countries"Countries"found AC 21-2J2J

JAPAN



IMPLEMENTATION PROCEDURES

FOR

AIRWORTHINESS

Covering

DESIGN APPROVAL, PRODUCTION ACTIVITIES,
EXPORT AIRWORTHINESS APPROVAL,
POST DESIGN APPROVAL ACTIVITIES, AND
TECHNICAL ASSISTANCE BETWEEN AUTHORITIES

Under the Agreement between
The Government of the United States of America
and
The Government of Japan
For Promotion of Aviation Safety

April 27, 2009

Critical Milestones for a Test & Computation Repairs/Alterations

In general terms these are the essential steps for a MRP/T&C Repair

- **Identify the candidate TC part**
- **Determine available substantiation data**
- **Determine if the part is "Critical" or if a Test Plan will be required.**
- **If test plan is required, define what test, and outcome data required.**
- **Determine ACO region, and FSDO region.region.**
- **Gather data, and develop MRP design.**
- **Submit test plan, Test results for a MRP application.application.**
- **Prepare RFC [FAI]--DMIR/DAR-DMIR/**
- **Prepare RFC [Installation] DAR-TT**
- **MRP/ design approved by ACO**
- **MRP/ FAB approved by FSDO**
- **MRP/Repair authority Ops issued by FSDO.FSDO.**

Modification & Replacement Parts

= Repairs, & Alterations

Why is a "Test Plan" required for Significant Repairs?

There are four events that will require a test plan to be submitted prior to MRP/Repair data application.

1.1. The TC part is "Critical", or a Life Limited, Rotating Part.

2.2. The Repair is based upon "Reverse Engineering" of a part with a service difficulty history.

3.3. Your design is similar but different enough to warrant testing.

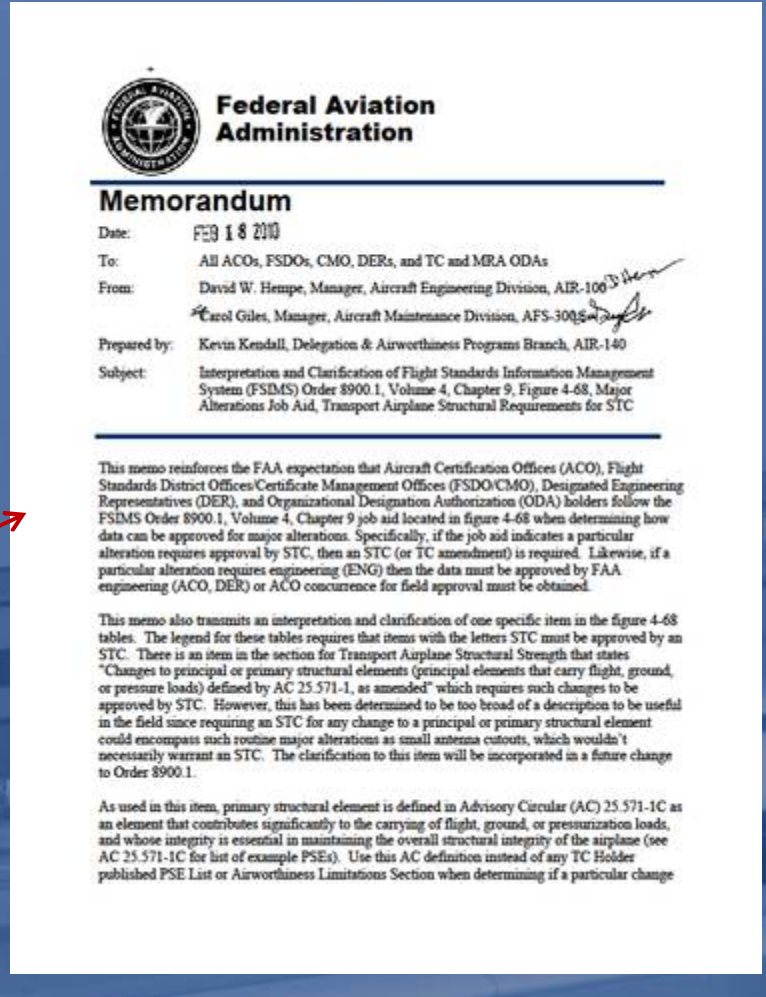
4.4. The part though itself NOT critical, it will significantly affect any element of 14 CFR Part 1.1 "Significantly"

AC 33 Draft XX & 8900.1 Job Aid

Various Repairs on different components:

- **Life Limited Rotating Critical Parts [Class I]**
- **Static Parts [Class II]**
- **Minor Parts [Class III]**
- **Class III repairs discussed**

NEW POLICY MEMO



Federal Aviation Administration

Memorandum

Date: FEB 18 2010

To: All ACOs, FSDOs, CMO, DERs, and TC and MRA ODAs

From: David W. Hempe, Manager, Aircraft Engineering Division, AIR-100

Carol Giles, Manager, Aircraft Maintenance Division, AFS-300

Prepared by: Kevin Kendall, Delegation & Airworthiness Programs Branch, AIR-140

Subject: Interpretation and Clarification of Flight Standards Information Management System (FSIMS) Order 8900.1, Volume 4, Chapter 9, Figure 4-68, Major Alterations Job Aid, Transport Airplane Structural Requirements for STC

This memo reinforces the FAA expectation that Aircraft Certification Offices (ACO), Flight Standards District Offices/Certificate Management Offices (FSDO/CMO), Designated Engineering Representatives (DER), and Organizational Designation Authorization (ODA) holders follow the FSIMS Order 8900.1, Volume 4, Chapter 9 job aid located in figure 4-68 when determining how data can be approved for major alterations. Specifically, if the job aid indicates a particular alteration requires approval by STC, then an STC (or TC amendment) is required. Likewise, if a particular alteration requires engineering (ENG) then the data must be approved by FAA engineering (ACO, DER) or ACO concurrence for field approval must be obtained.

This memo also transmits an interpretation and clarification of one specific item in the figure 4-68 tables. The legend for these tables requires that items with the letters STC must be approved by an STC. There is an item in the section for Transport Airplane Structural Strength that states "Changes to principal or primary structural elements (principal elements that carry flight, ground, or pressure loads) defined by AC 25.571-1, as amended" which requires such changes to be approved by STC. However, this has been determined to be too broad of a description to be useful in the field since requiring an STC for any change to a principal or primary structural element could encompass such routine major alterations as small antenna cutouts, which wouldn't necessarily warrant an STC. The clarification to this item will be incorporated in a future change to Order 8900.1.

As used in this item, primary structural element is defined in Advisory Circular (AC) 25.571-1C as an element that contributes significantly to the carrying of flight, ground, or pressurization loads, and whose integrity is essential in maintaining the overall structural integrity of the airplane (see AC 25.571-1C for list of example PSEs). Use this AC definition instead of any TC Holder published PSE List or Airworthiness Limitations Section when determining if a particular change

Order 8900.1 Vol 4 Chap 9

DER/ACO/FSDO Field Approvals for Major Alterations.

A CLOSER LOOK!

VOLUME 4 AIRCRAFT EQUIPMENT AND OPERATIONAL AUTHORIZATIONS

CHAPTER 9 SELECTED FIELD APPROVALS

Section 1 Perform Field Approval of Major Repairs and Major Alterations

4-1176 PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3414, 3416, and 3446.

B. Avionics: 5414, 5416, and 5446.

4-1177 OBJECTIVE. This section provides guidance in determining the category of a repair or alteration and ensuring that the aircraft, engine, or accessory can be returned to service in accordance with the field approval process, regardless of the rules under which the aircraft is operated.

4-1178 GENERAL.

A. Definitions.

1) Acceptable Data. The drawings and specifications necessary to define the configuration and design features of the repair or alteration. These drawings and specifications include information on weight, balance, operating limitations, flight characteristics, dimensions, materials, and processes that are necessary to define the repair or alteration. The following are examples of acceptable data and may be used as a basis for developing approved data to substantiate repairs or alterations:

a) Manufacturer's manuals are acceptable data that may be used as a basis for developing approved data for major alterations.

b) Federal Aviation Administration (FAA) Form 337, Major Repair and Alteration, when the specified data has been previously approved as a one-time alteration or repair, is acceptable data that may be used as a basis for developing approved data for subsequent alterations.

c) If it is not FAA-approved, data contained in a Structural Repair Manual (SRM); and current editions of Advisory Circular (AC) 43.13-2, Acceptable Methods, Techniques, and Practices—Aircraft Alterations, and AC 43.13-1, Acceptable Methods, Techniques, and Practices—Aircraft Inspection and Repair, are acceptable.

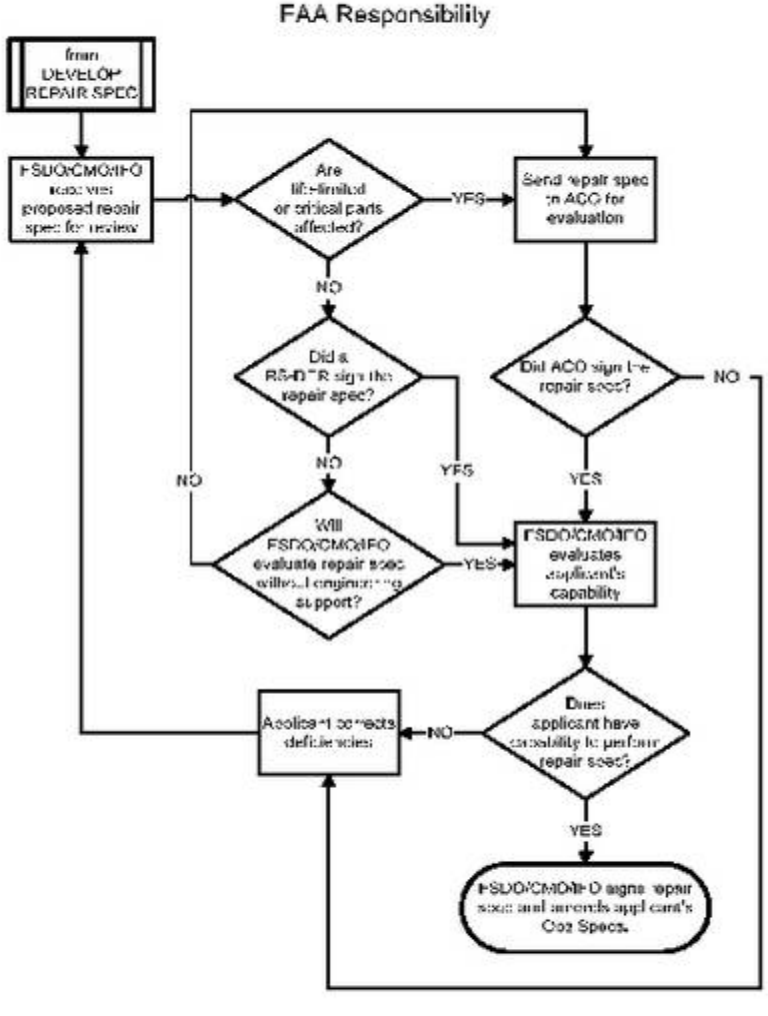
NOTE: The Original Equipment Manufacturer (OEM) SRM is a preferred manual even though the SRM is not FAA-approved.

2) Alter. To change or modify.

Obsoleted Order 8300.14a

RS-DER

Appendix C. Flowchart: Approve a Repair Specification

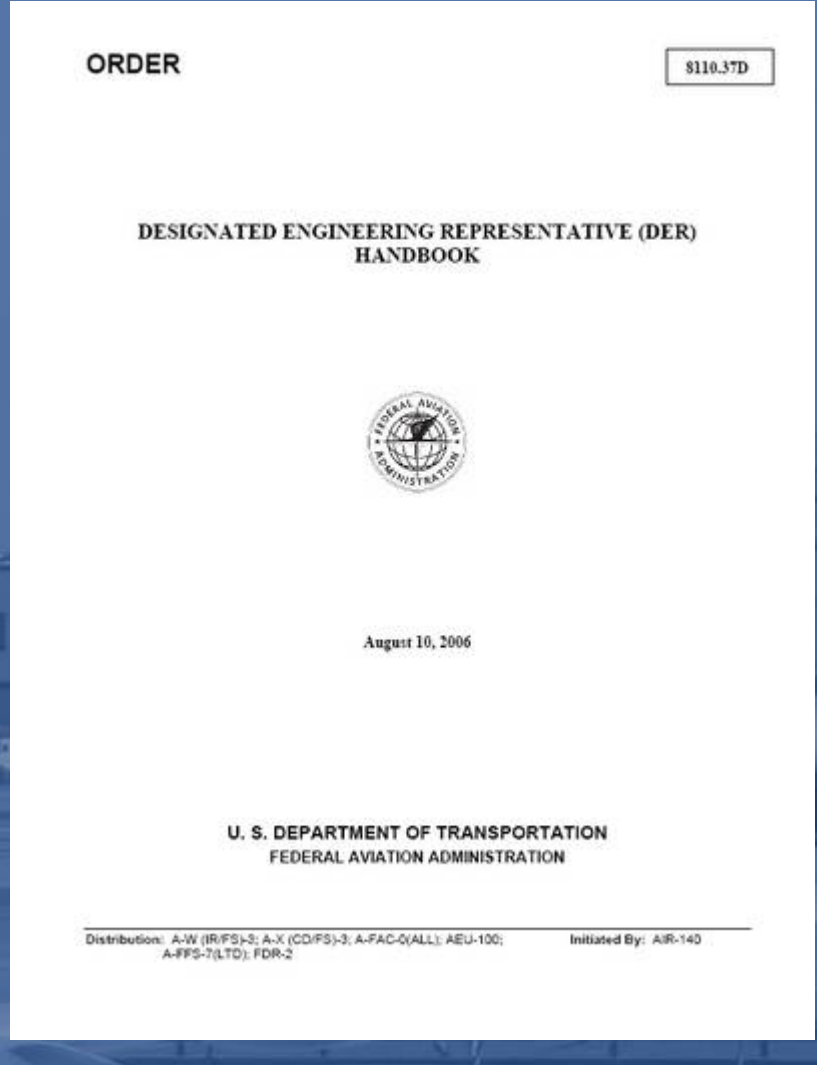


Proposed Notice N8110.RS

Which will address RS-DER Function and Repair Process Specifications For Multiple use.

FAA Order 8110.37D

- Key Changes
  - Obsoleted 8110.45, 8110.46, & 8110.47
  - Section 4-10 "International Activities"
  - Section 4-12 " Multiple Repair & Alteration authorization"



ORDER 8110.37D

DESIGNATED ENGINEERING REPRESENTATIVE (DER) HANDBOOK

August 10, 2006

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Distribution: A-W (IR/FS)-3; A-X (CD/FS)-3; A-FAC-0(ALL); AEU-100; A-FFS-7(LTD); FDR-2

Initiated By: AIR-140

Major Repair Model

Modification and Replacement Parts Template Instructions for DERS Group Projects. These instructions shall apply to all projects for Repairs, Alterations which are to be submitted for tracking to any FAA ACO/FSDO for concurrence or review. All applicable data necessary to substantiate the air worthiness of a repaired or altered component, appliance, or product shall be constructed and presented to meet 14 CFR Part 21.305, and classification of the type change shall meet the requirements of 14 CFR Part 21.93, 21.95, and /or 21.97. Classification of the repair or alteration shall be in accordance with 14 CFR Part 1.1 and any FAA national policies applicable.

Introduction:

The data package shall be constructed so as to clearly define what is being "Approved" by the designee, and what air worthiness regulations, and national policies were used to support a finding of compliance to the type change being submitted. The data package shall be a stand alone document, meaning all data, reports, test results, specifications, and FAA accepted or previously approved data will be cited and referenced in the data package. The FAA Form 8110-3, shall clearly denoted both what is being approved, and any limitations to that approval. The form should also include the scope of the approval being as specific as is required to clearly guide the applicant and those receiving the FAA Form 8110-3 of what design aspects have been approved.

Data Package Format:

The designee and/or the applicant shall prepare a project data package with the following report elements:

1. A **Introductions**, which defines what the repair or alteration consist of, ie. Part name, TC part number. Were used, and description of its Function. How its function or Failure affects the system, or product. [Failure Mode Analysis Summary], The TC product model(s) were it is installed. Also state why the applicant is seeking this approval, and any other motives for the seeking of FAA approvals.
2. **Revision record/configuration control page**
3. **Table of Contents**
4. **A logical Flow Chart**; that depicts were your proposed design departs from the TCH ICA, and were after the repair or alteration steps it returns to the TCH Standard practices (ICA). This should be identified by the applicable ATA sections of the TCH ICA [CMM, SRM, ESM, AMM, or SB's], this should also include a process summary [bullets] of each process sequence.
5. **Certification Basis narrative**
6. **Compliance check list**
7. **A "Draft 8110-3, filled out with the applicants identification data**
8. **Reference data**; List by reference ALL data used to support the proposed repair or alteration, ie. Industry specification, test results, SDR's/AD searches, CMM, AMM, SRM, ESM, SB's, SIL's, drawings, service history, and any other FAA accepted or approved data that will support the change, and classification.
9. **Processes and procedures**; Any critical or design success outcome dependent processes or procedures must be fully described and if being done by someone other than the applicant, then that vendors capabilities, and certification must be substantiated and documented.
10. **All Tooling, Fixtures, Jigs, and equipment**; necessary to produce and conform to the proposed design change must be identified in the data package.
11. **Drawings, Sketches, and Process control sheets**; with revisions, and/or dates shall be submitted.
12. **All Metallurgical, Mechanical test results shall be submitted.**
13. **Amended ICA's and/or an ICA statement, which should include new part identification after the repair/alteration is accomplished.**
14. **All reports or data shall be accepted and signed by the applicants QA, and Engineering departments.**

Delegated Engineering Services Group Inc.
P.O. Box 5217
Terre Haute, Indiana 47805
Tel: 812-460-0112 ~ Fax: 812-460-1577
Email: Faader@ders-group.com

Repair and Alteration Model

Use this outline for preparing any Repair or Alteration data. Keep in mind the following:

A Repair means the component is NOT airworthy…[it's broke] needs fixed!

A Alterations means its airworthy does NOT need fixed, could be returned to service, but you wish to modify [alter] its condition from [one approved condition to another approved condition] This is an alteration!

- **A table of contents [TOC]**
- **A revision table**
- **An Introduction [What's the problem, how are you fixing it, and what evidence [references will you use], to substantiate it!**
- **Repair procedure [In total detail: Sketches, Instructions, tooling, set-ups etc.] you should use digital photo's for clarity.**
- **If the data from the TC holder is lacking in detail, you should augment with testing, ie. Material ID, NDT, Mechanical, etc.**
- **List all references, IPC, ESM, AMM, SRM, SB's, SIL,s etc.**
- **Prepare check list [part 23, 25, 27, 29, or 33] depending on products.**
- **Compliance plan from the check list. [How you intend to prove that your repair design is in compliance to all the applicable airworthy regulations, and will result in returning the component to its assumed design, or approved altered condition.**
- **Criticality and safety assessment.**
- **Any other data that will support your change**
- **What FAA Rules, Orders, AC you used for your guidance.**

This should be render on to a CD-R in PDF format.

Overview — Title 14 of the Code of Federal Regulations (14 CFR)

Figure 12-1 reflects the changes in aviation related regulations, which have occurred during the time frame indicated in the left column. Just as aircraft continue to evolve with ever improving technology, so do the regulations, publications, forms, and records required to design, build, and maintain them.

The Federal Aviation Administration (FAA) regulations that govern today's aircraft are found in Title 14 of the Code of Federal Regulations (14 CFR). [Figure 12-2] There are 68 regulations organized into three volumes under Title 14, Aeronautics and Space. A fourth volume deals with the Department of Transportation, and the fifth volume is focused on NASA.

These 68 regulations can be separated into the following three categories:

1. Administrative
2. Airworthiness Certification
3. Airworthiness Operation

Since 1958, these rules have typically been referred to as "FARs," short for Federal Aviation Regulations. However, another set of regulations (Title 48) is titled Federal Acquisitions Regulations," and this has led

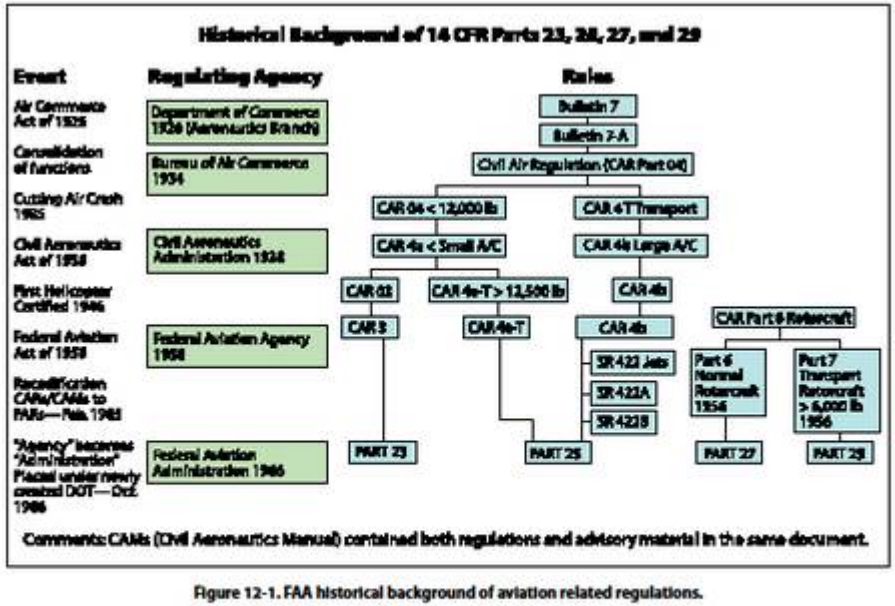
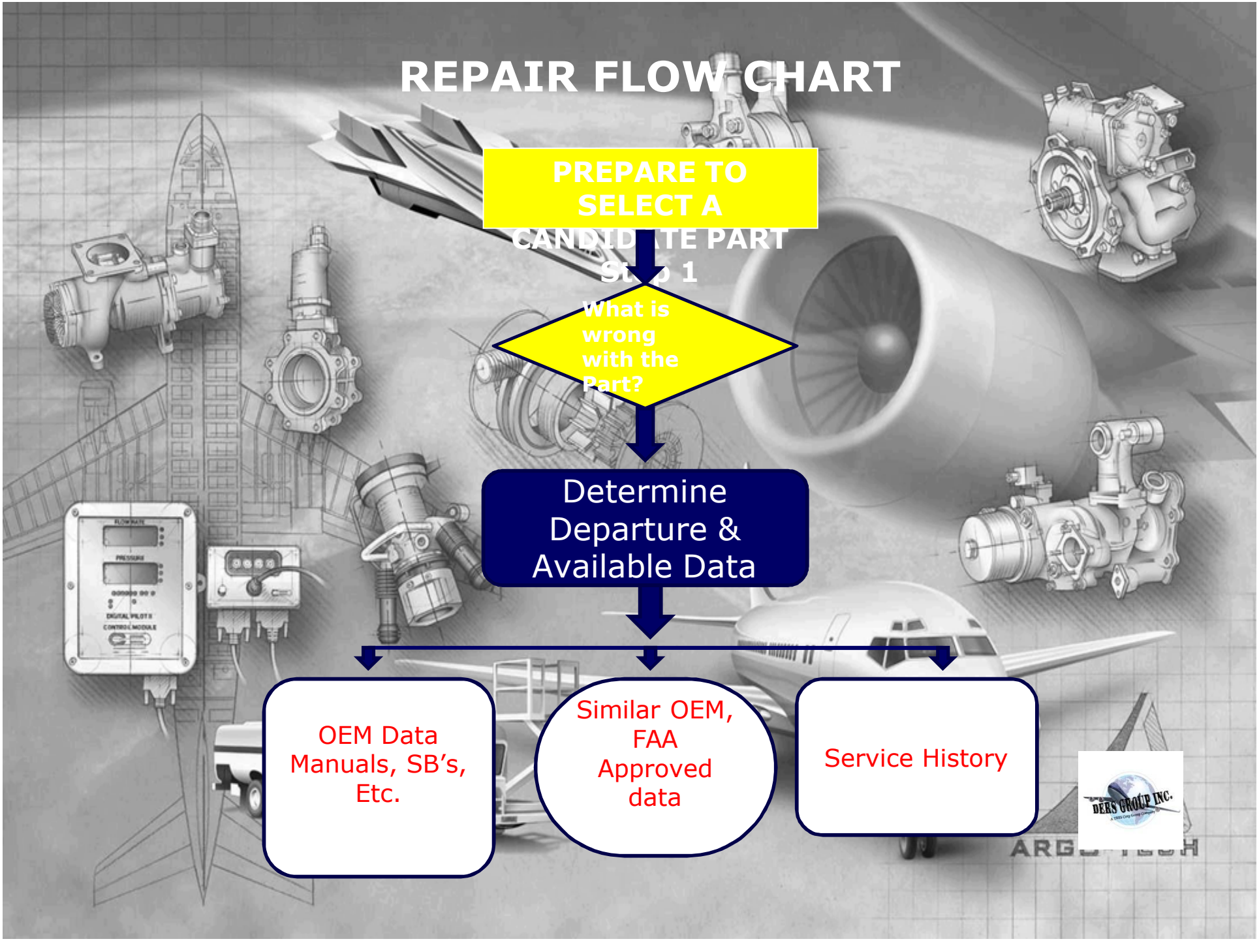
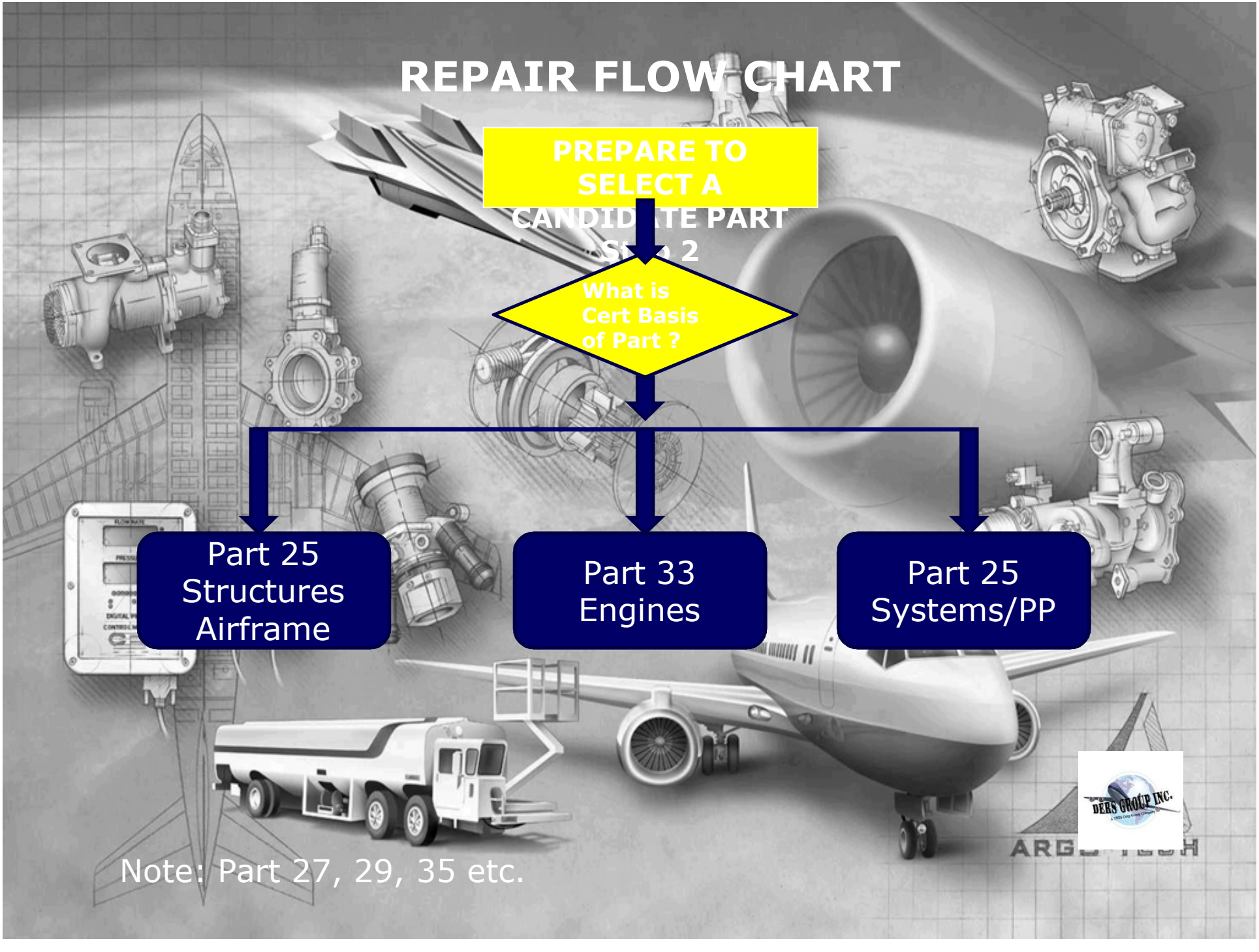


Figure 12-1. FAA historical background of aviation related regulations.

REPAIR FLOW CHART



REPAIR FLOW CHART



Note: Part 27, 29, 35 etc.

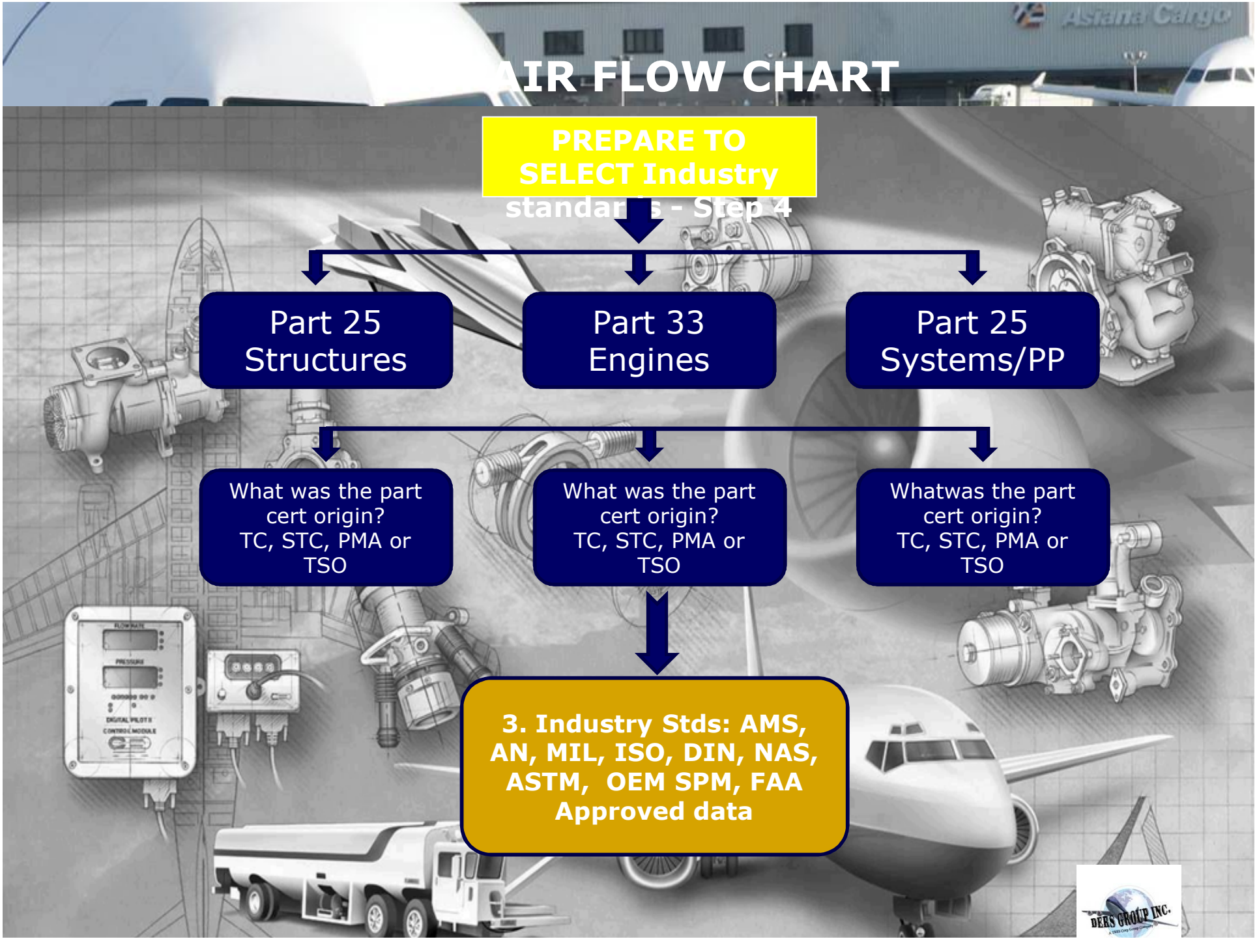
AIR FLOW CHART

PREPARE TO SELECT FAA Policies & Rules
Step 3

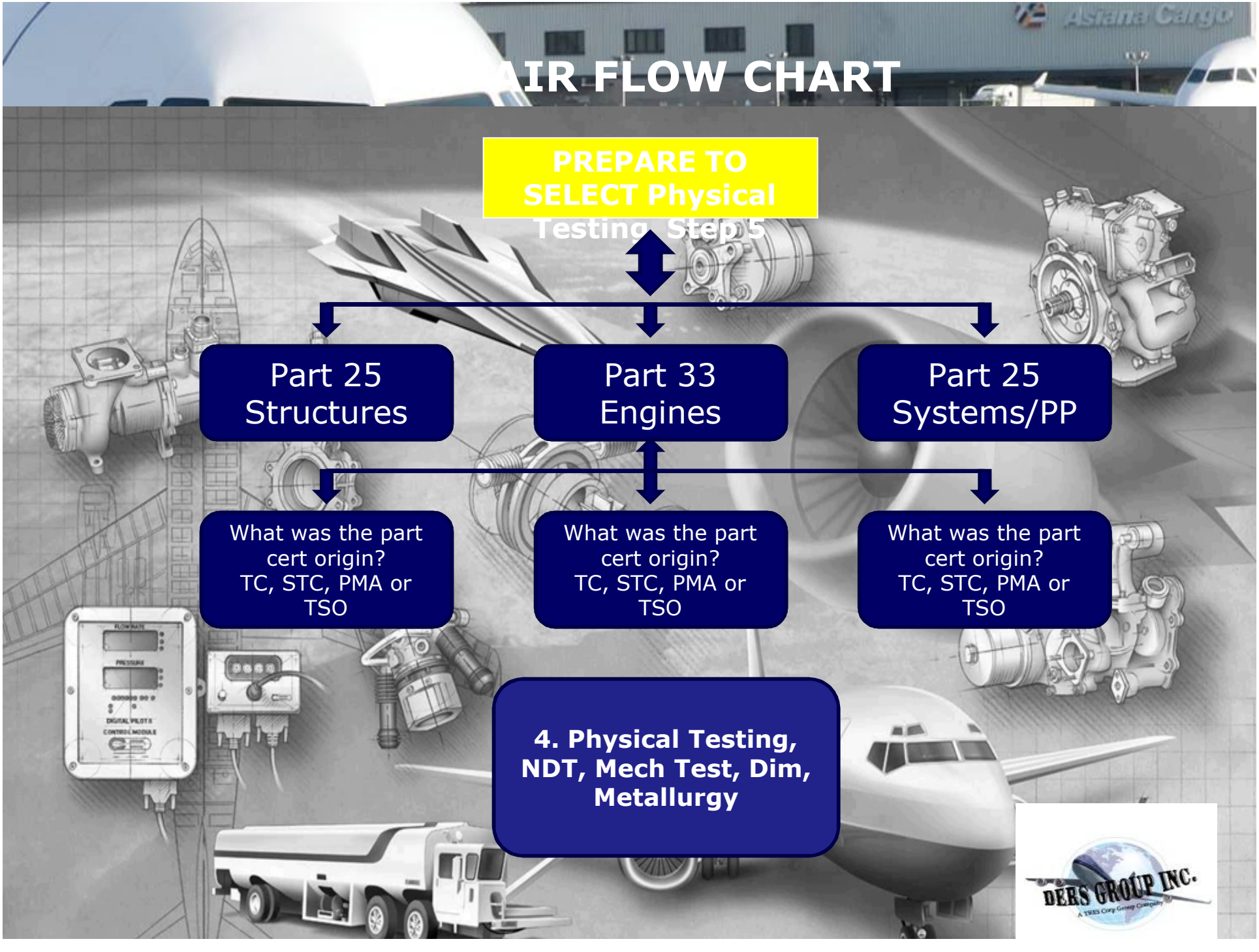
Part 25 Structures	Part 33 Engines	Part 25 Systems/PP
What was the part cert origin? TC, STC, PMA or TSO	What was the part cert origin? TC, STC, PMA or TSO	What was the part cert origin? TC, STC, PMA or TSO

2. FAA Data, AD's TCDS, SDR's , AC's, Orders,
AC 33.2B, AC 33 draft XX, AC 33-75-1, AC 23.1309, 25.1309, AC 43-18 Chg 1, 8110.37D, 8300.13, 8110.54, 8900.10, 8100.14a

AIR FLOW CHART



AIR FLOW CHART



AIR FLOW CHART

PREPARE TO SELECT A CANDIDATE PART
Step 6

Part 25 Structures	Part 33 Engines	Part 25 Systems/PP
What was the part cert origin? TC, STC, PMA or TSO	What was the part cert origin? TC, STC, PMA or TSO	Whatwas the part cert origin? TC, STC, PMA or TSO

5. Testing/Verification

AIR FLOW CHART

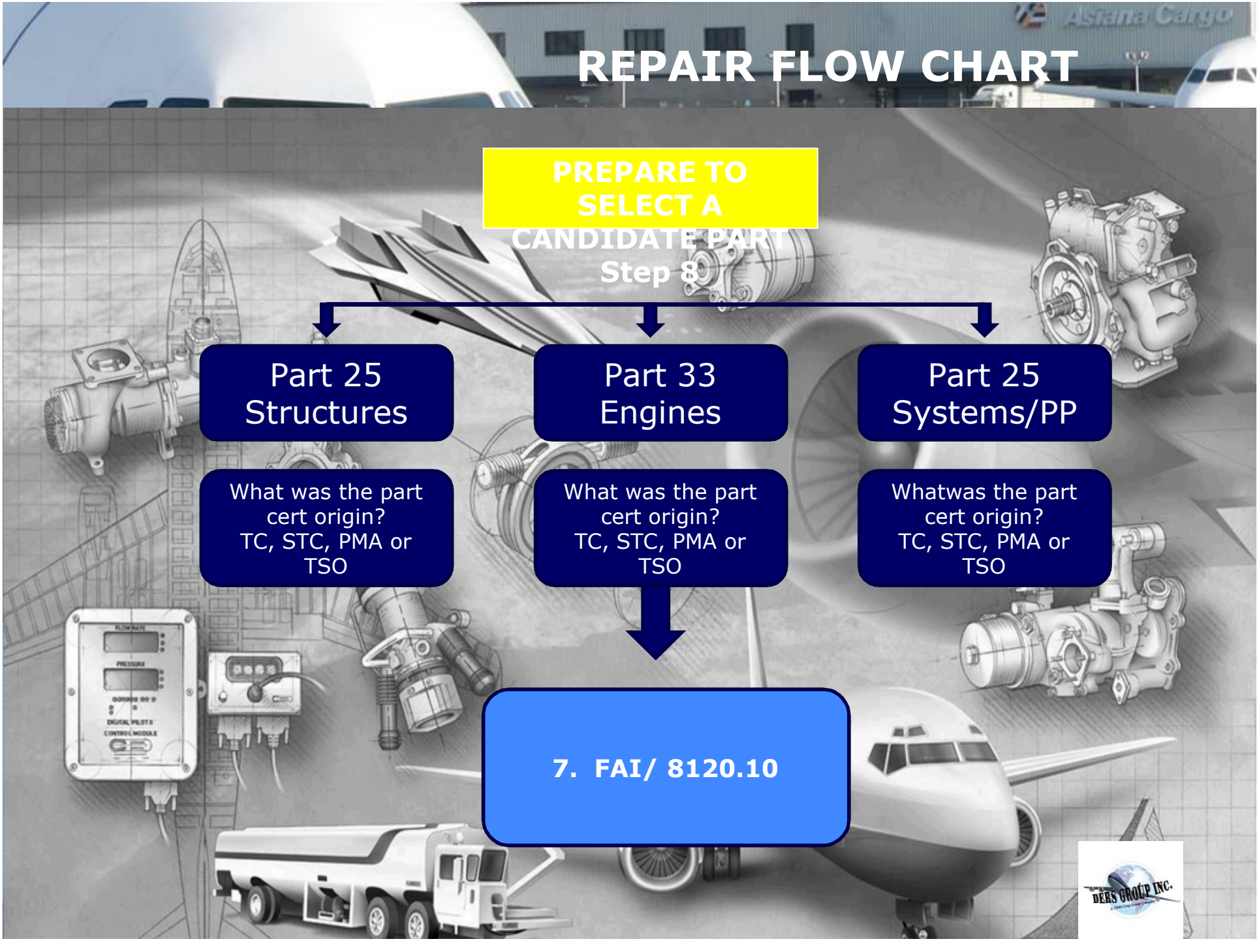
PREPARE TO DO A Analysis of the repair of [illegible] - Step 7

Part 25 Structures	Part 33 Engines	Part 25 Systems/PP
What was the part cert origin? TC, STC, PMA or TSO	What was the part cert origin? TC, STC, PMA or TSO	What was the part cert origin? TC, STC, PMA or TSO

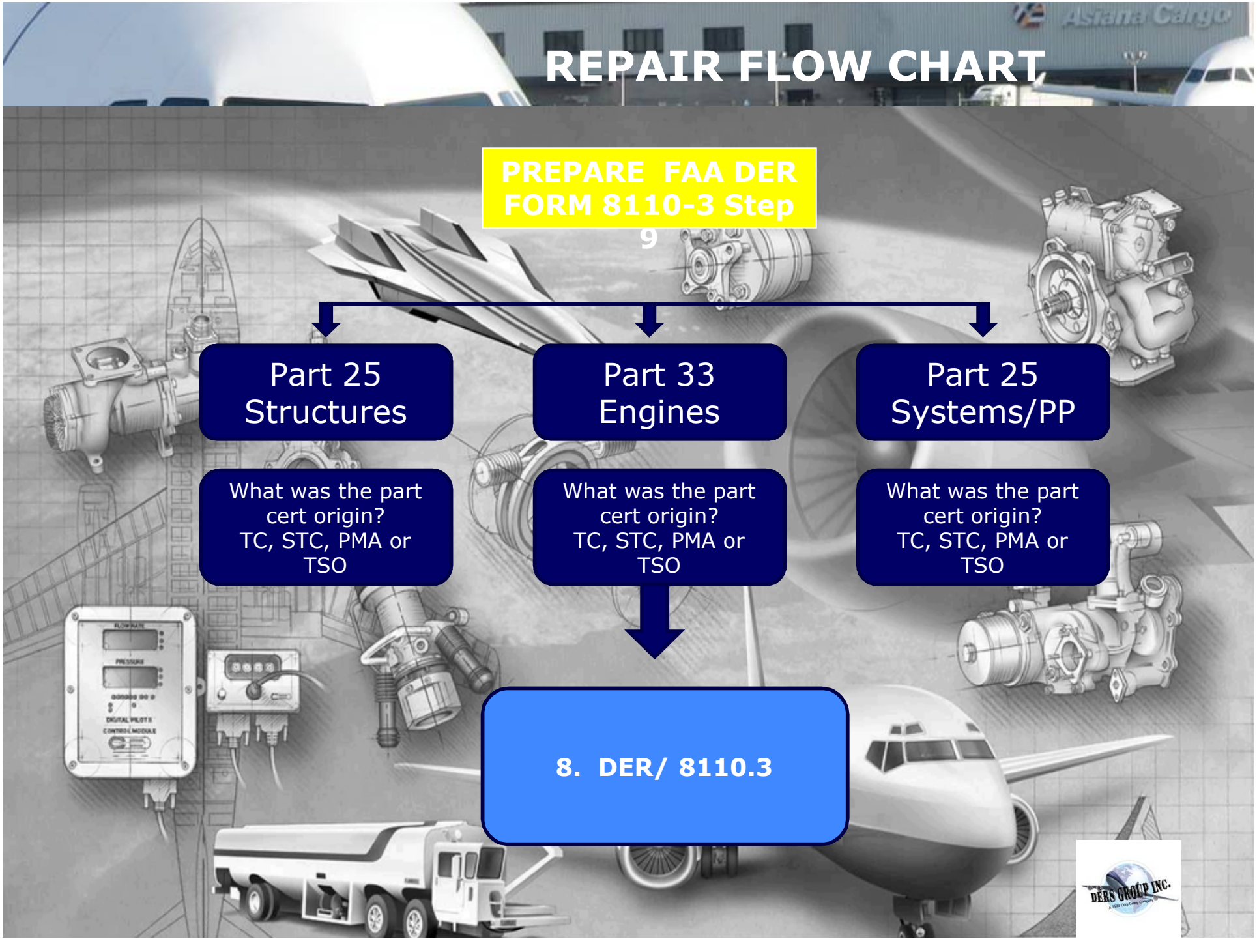
6. Analysis of Repair Design:
   a. S&C Analysis AC 25.1309-1A {use 23.1309-1C model} 3 function: FEMA, FTA, D/T FFA

DERS GROUP INC.
A TRES Corp Group Company

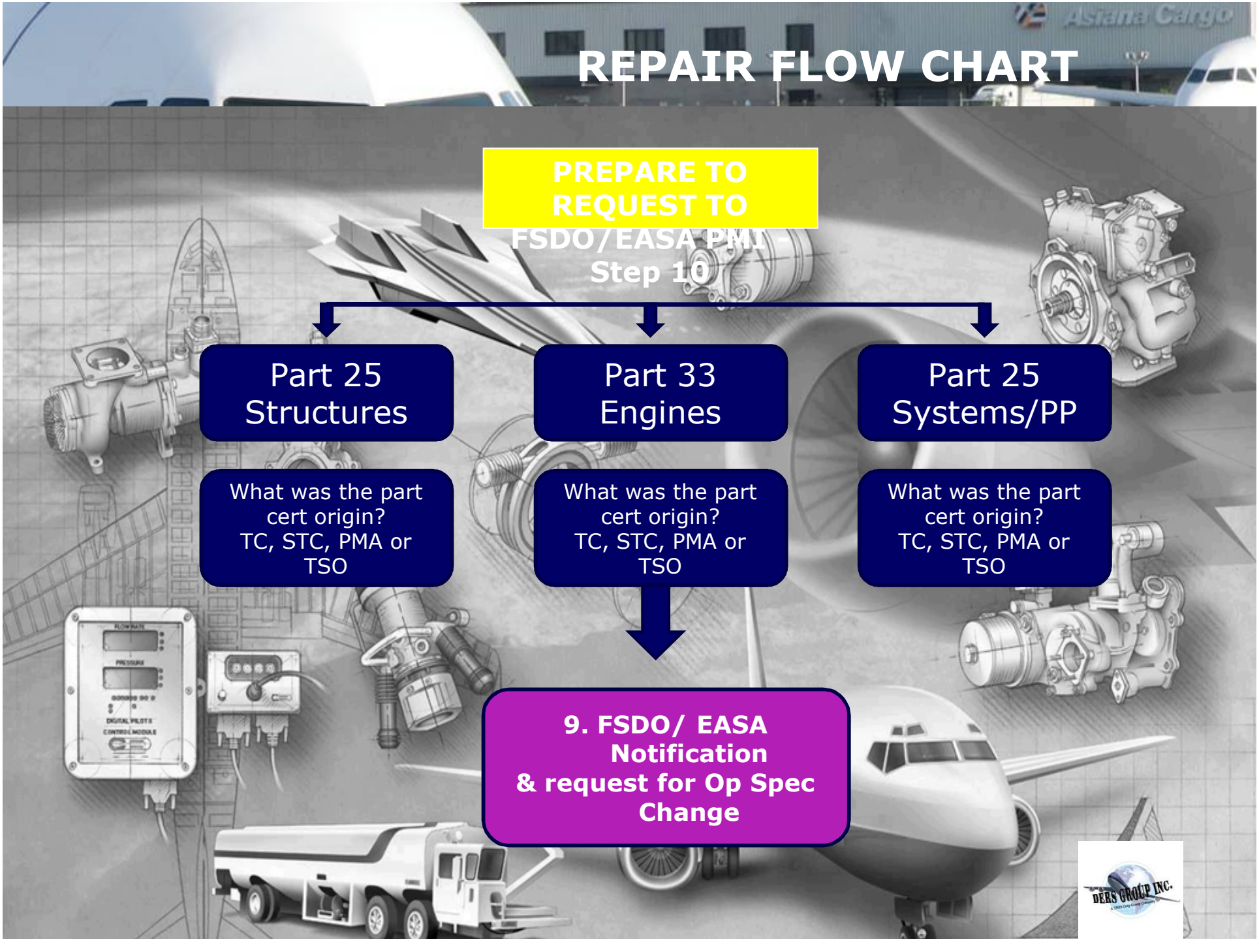
REPAIR FLOW CHART



REPAIR FLOW CHART



REPAIR FLOW CHART



8110-3 Example

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

STATEMENT OF COMPLIANCE WITH THE FEDERAL AVIATION REGULATIONS

DATE: January 15, 2007

AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION

MAKE	MODEL NO.	TYPE (Airplane, Radio, Helicopter, etc.)	NAME OF APPLICANT
GE	[CF6-50] [See Note1]	Powerplant component	Alitalia Servizi , Rome, Italy

LIST OF DATA

IDENTIFICATION	TITLE
EO CRG-07-001, CF6-50 Translator Cowel –Inner Fwd Panel Disbonding patch repair dtd January 11, 2007 ***END***	EO CRG-07-001, CF6-50 Translator Cowel –Inner Fwd Panel Disbonding patch repair dtd January 11, 2007. Utilizing GE CF--50 Repair 003 for P/N 9017M38G13 S/N MCB-02006. *Only applicable to S/N MCB-02006 (A/C P/N 9105M20G01 S/N R475-633) **END DATA** Note*) 1 : Reference data already FAA/EASA/CAA accepted or approved and Not being re-approved by FAA DER. • GE CF6-50 ESM ATA 70-32-01 Repair 003 • GE CF6-50 IPC ATA 70-32-01, GE SB 70-102 • GE CF6-50 ESM Cleaning procedure ATA 70-31-00 Note*) This approval is for repair design aspects only. Only process specifications that are part specific [not generic shop practices]...or process specifications that are design outcome sensitive and dependent are being approved. All others [generic, or shop practices] are the responsibility of the local CAA/TSDO. Installation approval is to be obtained by the cognizant FSDO or your CAA, and is the responsibility of the installer to secure installation approval, as defined by 14 CFR 14 Part(s) 43.7, 43.13 and Order 8110.37D, Order 8110.54, 8300.13 and 8100.14a Note*) Reminder that any ICA changes considered "substantive" must be also AEG/FSDO/ACO FAA approved see Note 4. Note*) The FAA DER ICA compliance finding is limited to either that the existing ICA is NOT substantively affected and the proposed repair or alteration will allow the existing ICA to be fully applicable, or that there is a minor change to the existing ICA, and and a identified supplemental ICA as is required by 14 CFR Part 21.303, 21.305, Order(s) 8300.13, and 8110.54 will be issued to the installer. It is the installers responsibilities to coordinate any supplemental ICA's approvals with their cognizant CAA/FAA as is applicable. Note*) For the purpose of classification as it pertains to "Repairs" for FAA use 14 CFR Part 1.1 for repair classification, and 14 CFR Part 21.93 for classification affect upon the type design using the guidance in Order(s) 8110.37D, 8100.14a, 8300.13, 8110.54, and FAA AC 120-77, AC 20-114, AC 43-18, and AC 33 draft XX. Accordingly the repair affect on the type design is Minor. • For FAA classification of Repair this is a Minor Type Change but a Major Repair as defined in the above airworthiness regulations • For EASA classification of the Repair this is a Minor Type Change and a Minor Repair as defined in EASA 21A.435, and any applicable Bi-laterals in effect at the time of the 8110-3 execution. Note*) The following Federal Aviation Regulations, Advisories and Orders were used as guidance for determination of repair/alteration classification and approval: CFR 1.1, CFR 21.93, CFR 21.95, CFR 21.305(d) CFR 43.13(a)(b)(c), & CFR 43 Appendix B, FAA Advisory AC Model XX, AC 43 Feb-18, AC 33.2B, AC33.75-1, AC 20-114, AC 23.1309 1C, AC 120-77 and FAA Order(s) 8110.37D, 8110.42B, 8300.10, 8300.13, 8110.54, 8000.50 8100.14a, BASA/IMP USA & Italy, and EASA ED 2004-04-CF *** END ***

PURPOSE OF DATA : (DER/GRP2007-002)

In Support of a Minor Type Change Classification, and a ☒ Major Repair, and/or a ☒ Minor Alteration Data Approval in accordance with 14 CFR Part(s) 21.93, 21.95, 21.305(c), (d). Order 8110.42B, 8110.37D section 4-12, AC 33.2B paragraph 12, & 11, & AC 43-18.

APPLICABLE REQUIREMENTS (List specific sections)

25.1[Applicability], 25.301[Loads], 25.303 [Factor of safety], 25.305 [Strength and deformation], 25.307 [Proof of structure], 25.601 [General], 25.603 [Materials], 25.605 [Fabrication methods], 25.607 [Fasteners], 25.609 [Protection of structure], 25.611 [Accessibility provisions], 25.613 [Material strength properties and design], 25.1529 [EFCAW]

CERTIFICATION - Under authority vested by direction of the Administrator and in accordance with conditions and limitations of appointment under Part 183 of the Federal Aviation Regulations, data listed above and on attached sheets numbered NONE have been examined in accordance with established procedures and found to comply with applicable requirements of the Federal Aviation Regulations.

I/we (X) Therefore ☐ Recommend approval of these data ☒ Approve these data

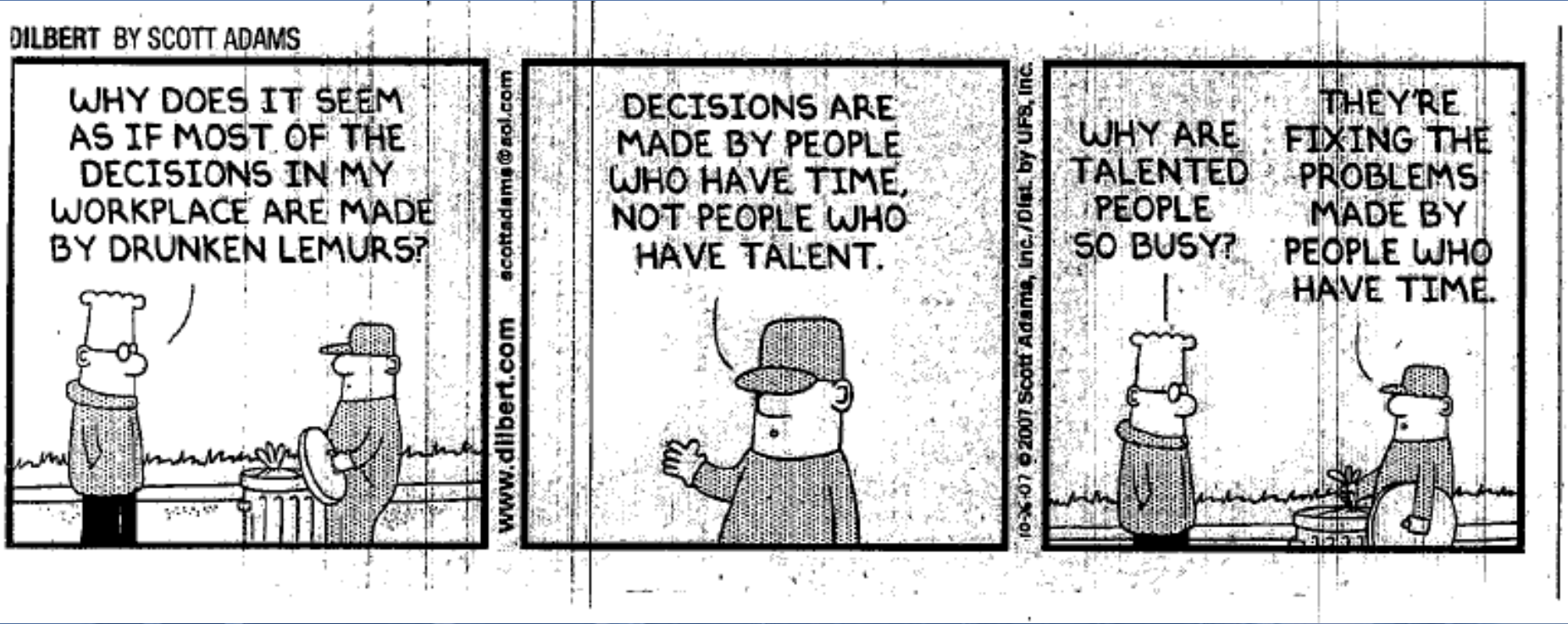
SIGNATURE (S) OF DESIGNATED ENGINEERING REPRESENTATIVE (S)	DESIGNATION NUMBER(S)	CLASSIFICATION (S)
Dominick P. DaCosta	DER 433000CE	ENGINES, STRUCTURES, C1 SYSTEMS, & POWERPLANT

FAA Form 8110-3 (11-72) SUPERSEDES PREVIOUS EDITION — ELECTRONIC FORMAT (4-98)

RE-CAP

- The way we do business regarding Global Repairs has changed!
- We now need to stay current with both FAA, Bi-laterals, and EASA rules!
- Make friends with EASA -21 DOA organizations!
- Are We having Fun yet?
- Please remember to fill out the survey form
- If you wish FAA credit per AC 65.25B advise Gorham Representative!

On the Light Side!



SOUND FAMILIAR?