
Airframe Guidance Questions and Answers

ANM-120S, SACO Airframe Branch

2003 DER Conference

Airframe Breakout Session

November 6, 2003

Update on the Harmonization Efforts

✍ General Structures Harmonization Working Group (GSHWG)

http://www1.faa.gov/avr/arm/arac/wg_tae_GeneralStructuresHarmonization.cfm

☞ Proof of Structure, § 25.307

- ✍ In the system waiting for publication of NPRM

☞ Casting Factors, § 25.621

- ✍ In the system waiting for publication of NPRM

☞ Strength of Windshields and Windows, § 25.775

- ✍ AC 25.775-1 published January 17, 2003, no rule change

☞ Material strength properties and material design values, § 25.613

- ✍ Amendment to § 25.613 effective September 4, 2003

Update on the Harmonization Efforts

✍ GSHWG (*continued*)

☞ Bird strike, § 25.631

- ✍ Final report submitted June 30, 2003
- ✍ GSHWG did not reach agreement so no rule change was proposed

☞ Fatigue and damage tolerance, § 25.571

- ✍ GSHWG report with proposed harmonized rule and advisory text submitted to Transport Airplane and Engine Issue Group (TAEIG) in July, 2003

☞ Tire tread impact

- ✍ No activity

Update on the Harmonization Efforts

Loads & Dynamics Harmonization Working Group

http://www2.faa.gov/avr/arm/arac/wg_tae_LoadsAndDynamics.cfm

Section 25.302 - Interaction of Systems and Structures

-  Similar to special conditions that were developed to address the unique characteristics of Electronic Flight Control Systems
-  Applicability - Systems that affect structural performance in either normal or failed state
-  Structural design loads and flutter margins are based on system reliability
-  Status of NPRM
 -  The NPRM has been drafted and is awaiting FAA economic evaluation
 -  The JAA has published the corresponding Notice of Proposed Amendment, which incorporates minor changes as a result of comments disposed by the Loads & Dynamics Harmonization Working Group

Update on Aging Aircraft Program

Aging Airplane Structures

Blue rectangles on this page describe components of the program to maintain the structural integrity of aging transport airplanes.

Non-Structural Systems on Aging Airplanes

The pink trapezoid on this page describes ongoing efforts to ensure that electrical wiring systems are adequately designed, maintained, and repaired.

Enhanced Airworthiness Program for Airplane Systems (EAPAS)

- May apply to most transport airplanes.
 - Anticipated that it will enhance safety requirements for design, installation, and maintenance of electrical wiring on transport airplanes.

Corrosion Prevention and Control Program (CPCP)

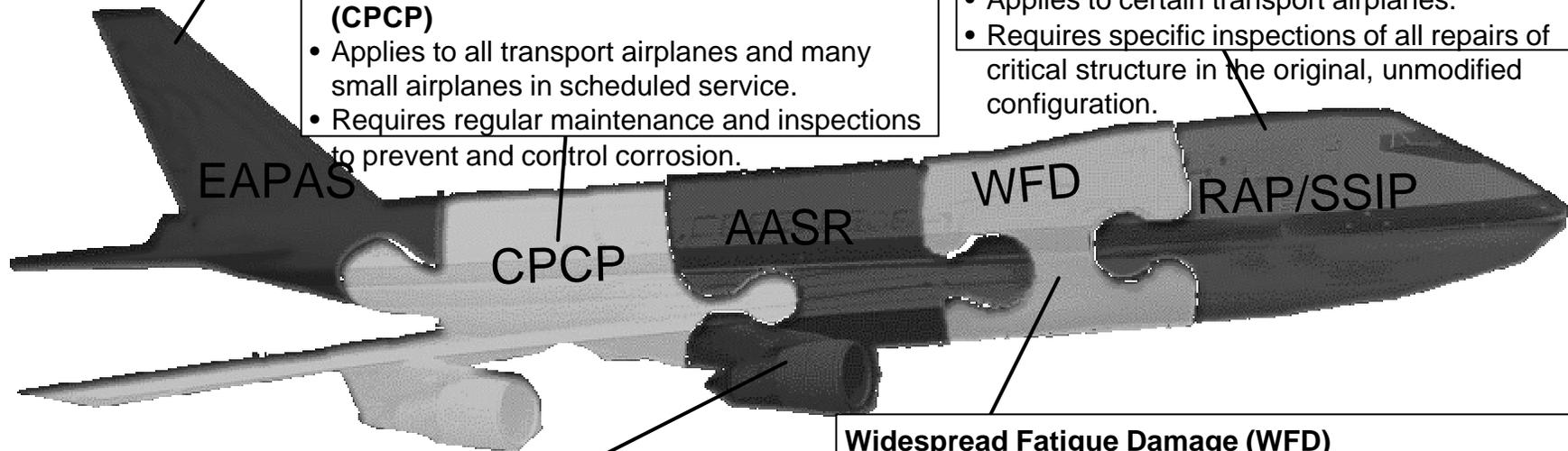
- Applies to all transport airplanes and many small airplanes in scheduled service.
- Requires regular maintenance and inspections to prevent and control corrosion.

Repair Assessment Program (RAP) Rule

- Applies to certain transport airplanes.
- Requires specific inspections for repairs on certain (pressurized) areas of the fuselage.

Supplemental Structural Inspection Program (SSIP)

- Applies to certain transport airplanes.
- Requires specific inspections of all repairs of critical structure in the original, unmodified configuration.



Aging Airplane Safety (Interim Final) Rule

- Requires maintenance and inspection records reviews for certain airplanes
- Also, requires maintenance programs to include specific inspections of structure in the original, unmodified configuration as well as any structure that has been repaired, altered, or modified

Widespread Fatigue Damage (WFD)

- Large transport airplanes (>75,000 lbs)
- May require regular maintenance to prevent simultaneous fatigue cracks in multiple locations (WFD) that could result in catastrophic failure
- May establish a time limit up to which the maintenance program is designed to preclude WFD

Update on Aging Aircraft Program

Aging Aircraft Safety

- ☞ Interim Final Rule issued on November 1, 2002
- ☞ Comments from the public are being dispositioned
- ☞ The FAA is completing its work on the final rule, and anticipates issuing it by July 2004
- ☞ An Advisory Circular and new FAA Order 8300.10 are planned to be issued prior to December 8, 2003, to aid compliance with the rule

Update on Aging Aircraft Program

Repair Assessment (§ 121.370)

-  Repair Assessment is a final rule
-  The Repair Assessment Guidelines (RAG), those applicable to the fuselage pressure boundary per §121.370, have been FAA-approved
-  Operators have incorporated the RAGs into their maintenance or inspection programs
-  FAA order has been written and is waiting to be signed

Corrosion Prevention and Control Program (CPCP)

-  NPRM and AC published in Federal Register on October 3, 2002
-  FAA is addressing the final rule, and should have something out by 2nd quarter of next year

Update on Aging Aircraft Program

- ✍ Supplemental Inspection Document (SID)
 - ☞ SID Team recommendations are being worked by SACO/LAACO
 - ☞ Public meeting was held on February 27, 2003 to get operator feedback
 - ☞ Standardized language has been established for SSID ADs, and can be observed in the recent 747 and MD-80 SSID NPRMs

- ✍ Widespread Fatigue Damage (WFD) NPRM is being worked by FAA Team through ARAC
 - ☞ Proposed rule to implement a program to preclude WFD from the fleet of large transport category airplanes
 - ☞ Currently under review by general counsel (AGC-1) in FAA Headquarters, Washington D.C.
 - ☞ Projected date of NPRM is 3rd or 4th quarter of 2004

DER General Responsibilities

FAA Form 8110-3 Reminders

- ✍ FAA Forms 8110-3 cannot be revised, but can be superseded or supplemented
- ✍ FAA Forms 8110-3 are the only method by which DER's can approve documents on behalf of the FAA
- ✍ The date on top of the FAA Form 8110-3 is to be the date that the DER signed the form
 - ☞ If multiple DERs are signing the form, then the date on the form is the date the last DER signed the form
 - ☞ Dates used other than the day the DER signs the form are regarded as falsified records

Conformity

✍ FAA Form 8120-10, Request for Conformity (RFC)

- ☞ Be as explicit as possible
- ☞ Use the special instructions field where necessary
- ☞ Identify the elements that are critical to the outcome of the design or test
- ☞ If there are not any obvious critical elements, state “conform to drawing XXXX, revision X”

Conformity

✍ FAA Form 8120-10 (*continued*)

☞ The ACO project engineer may allow, on a case-by-case basis, the addition of “or later FAA-approved revision” to the RFC

- ✍ The DER must review all of the later revisions of the drawings to ensure that the later configuration has not changed in a manner that would negate the purpose of the test or inspection
- ✍ There must be an understanding between the ACO, the DER, and the applicant about how later revisions will be made known to the project engineer
- ✍ The FAA Form 8120-10 must define “FAA-approved,” for example “Later FAA-approved revision can be an approval by Seattle ACO or DERT-635XXX-NM John Doe.”
- ✍ The Conformity Inspection Record, FAA Form 8100-1, must state clearly for what revision level of the design data the conformity was done

Conformity

Aerospace metals

- ☞ If the test coupon is fabricated per an accepted standard, such as American Society for Testing and Materials (ASTM), it does not need to be conformed, regardless of the country in which it is fabricated
- ☞ Quality control procedures need to be in place to ensure the coupon is manufactured to the standard, and measured and tested accurately

Composites

- ☞ If the coupon is not per a standard such as ASTM, then it will most likely need conformity
- ☞ ACO project engineer makes the final decision

Certification Approvals

- ✍ Any FAA Form 8110-3 recommending approval of data in support of certification may only go to the ACO making the approval
 - ☞ No copies of this form should go to anyone else.
 - ☞ The purpose of this requirement is to make sure that no data is sent out with the appearance of FAA concurrence, when the FAA would not approve it

Certification Approvals

Where are CRI's and special conditions listed on FAA Forms 8110-3?

✍ Any applicable requirement that is a rule issued by a regulatory agency should be listed in the Requirements block, while documents that are means to comply with rules would go in the List of Data.

- ☞ Special Conditions would be listed in the Requirements block
- ☞ CRIs and issue papers would not
- ☞ Issue papers only need to be listed (in the List of Data) if the purpose of the FAA Form 8110-3 is to find compliance of the issue paper to the FARs

Airworthiness Limitations Instructions (ALI)

- ✍ Section 25.1529 should not be listed on the FAA Form 8110-3
 - ☞ Retained by the FAA Aircraft Evaluation Group (AEG) except for ALI, which are approved by ACO
 - ☞ Section 25.571 should be cited for development of alternative inspection requirements

DER General Responsibilities

✍ Sources for guidance

- ☞ FAA Order 8110.37C DER Guidance Handbook
- ☞ FAA web site for designee information at <http://av-info.faa.gov/dst/>
- ☞ FAA Regulatory and Guidance Library http://www1.airweb.faa.gov/Regulatory_and_Guidance_Library/rgWebcomponents.nsf/HomeFrame?OpenFrameSet
- ☞ DER advisor in the SACO