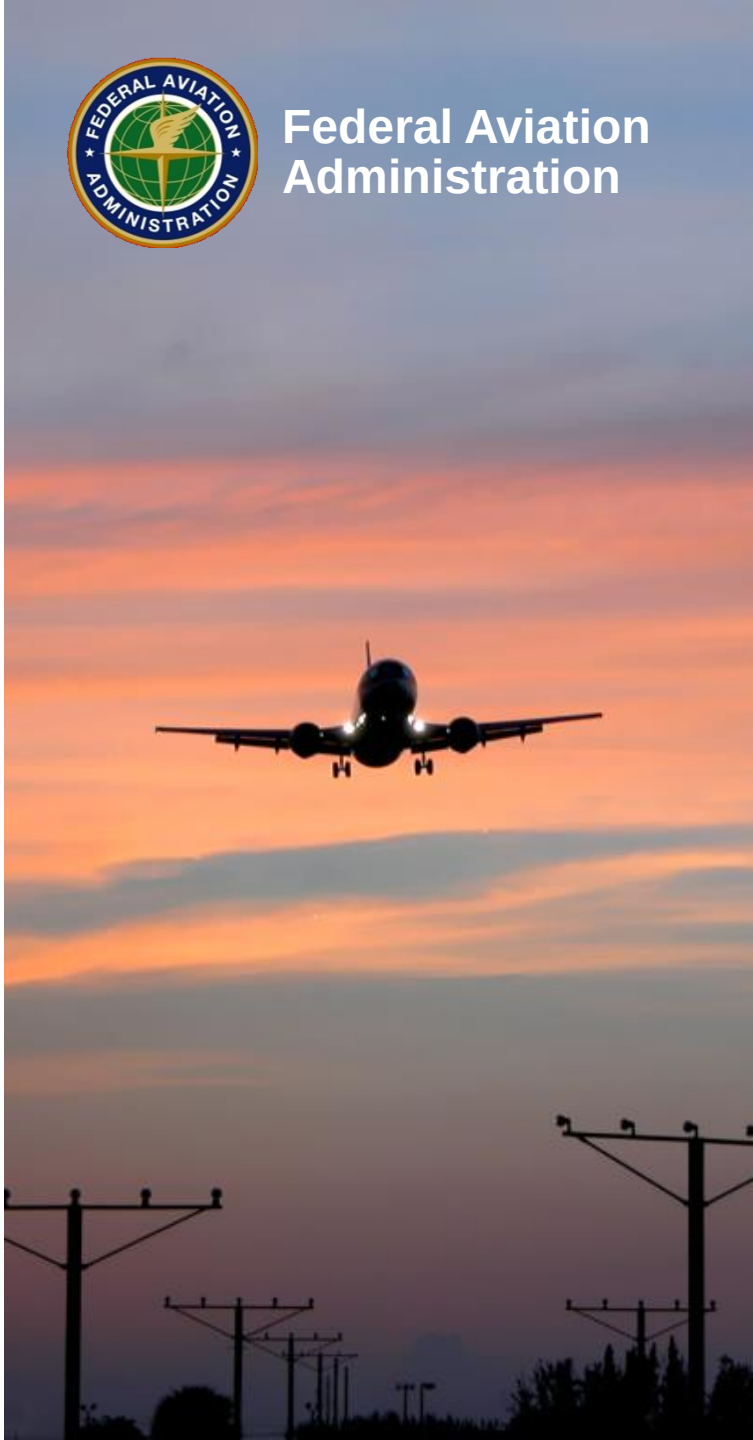
Composite Operational Issues

Federal Aviation Administration



Presented to: Composite Workshop

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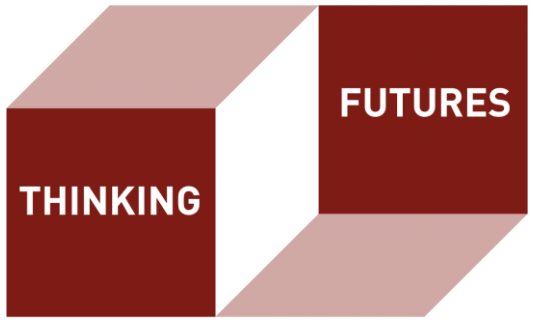
Why are we here?

- **Information Sharing;**
  - Why the need for Bonded Repair Size Limits (BRSL)?
    - Field experiences
    - Technician versus M&P



  - We learn from you!!
    - Where do we focus our energies (limited composite resources)
    - What do you see as additional guidance needs?

Operational Issues & BRSL

- **BRSL Policy was developed because the FAA concluded that bonded repair of critical structure is a potential safety threat.**
- **Common processing errors can cause undetectable low bondline strengths.**
- **There are no reliable (NDI) techniques to ensure a bonded assembly has achieved full strength.**
- **Must ensure limit load capability in the event of bonded repair failure resulting from processing mistakes or problems.**

Observed Deficiencies

- Under strength repairs
- Poor quality repairs
- Lack of substantiating data
- Unapproved material substitutions
- Heat blanket overlaps
- Misplaced thermocouples
- Improper use of tooling
- Failure to follow good process control

Technician Competency

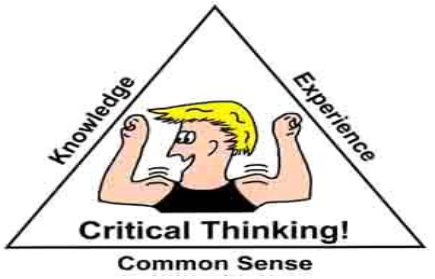
- Frequency of repairs not sufficient to maintain competency or develop work force
- Union issues (Positions often dependent on seniority versus skill sets)
- Training deployment and adoption into airline maintenance programs (training is expensive in terms of lost man-hours and actual training cost.)
  - Not enough focus on process controls
  - Non standard materials and repairs leads to confusion
  - Specific training often needed for multiple OEM processes

Human Factors:

- **Composite repair team must take ownership of the entire process**
- **SRM,s are easily mis-interpretated and the digital data is harder to follow, Major problem with multiple fleets**
- **Material data is a mine field all, OEM,s have a lot to do to improve this**
- **Specs, consumable materials need harmonizing helps avoid mistakes**
- **Some technicians think they are more knowledgeable than they are, i.e. sure they can do more complex repairs without understanding all the complexities**

Path forward:

- **Operator leadership teams need to facilitate the support and understanding of the composite world, as we look to them for policy,**
- **Managers need to listen too and support the experts in building a solid Tech Base i.e, engineers, technicians, inspectors**



Additional Issues

- **Apprentice training/certification at college level for technicians is a plus but airlines find it hard to hire from outside into the shops.**
- **Shift turn overs and the need for continuity**
- **Material substitution will always be a problem.**
- **Processes have been proven to be valid if personnel realize the importance of each step and follow them.**

NDI Path Forward

- **Initiated a R&D project for NDI of composite structure.**
- **Held two workshops attended by airlines and MRO's.**
  - Many of the same issued were raised such as lack of opportunities.
  - Proficiency specimens
  - Training curriculums (3 day class)
  - Integration of proficiency standards into training program