Composite Operational Issues

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 issues were raised such as lack of opportunities.
  – Proficiency specimens
  – Training curriculums (3 day class)
  – Integration of proficiency standards into training program