FAA
Bonded Structures Workshop

June 16-18, 2004
Embassy Suites Hotel
Seattle, WA
Welcome

• Thank you for taking time from your normal duties and activities to support this effort
• We appreciate the time each of you has spent on filling out the survey and other preparations for the workshop
• Collectively, the industry and regulatory agencies can combine their bonding experiences and technical insights to the mutual benefits of improved safety and efficiency in development & certification
Registration

• Please check in for this workshop
  – it is separate registration from MIL-HDBK-17
• This will allow us to provide you with continuing information on this Workshop
• Please see MJ Schnabel at desk in outside door to meeting room
## Agenda for Bonded Structures Workshop

<table>
<thead>
<tr>
<th>Time</th>
<th>Wednesday, June 16</th>
<th>Thursday, June 17</th>
<th>Friday, June 18</th>
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<tbody>
<tr>
<td>1st Hour</td>
<td></td>
<td><strong>Session 2</strong></td>
<td><strong>Session 5</strong></td>
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<td></td>
<td></td>
<td>Four Technical Breakout Sessions</td>
<td>Manufacturing Implementation &amp; Exp.</td>
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<td><em>Groups in 4 separate rooms (8 AM - Noon)</em></td>
<td><strong>Session 6</strong></td>
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<td><em>All participants will attend each session, which are run by technical experts</em></td>
<td>Repair Implementation &amp; Experience</td>
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<td>Break (15 min.)</td>
<td><strong>Session 3</strong></td>
<td><strong>Session 7</strong></td>
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<tr>
<td>2nd Hour</td>
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<td>Material &amp; Process Qualification and Control</td>
<td>Summary from Day 2 Breakout Teams Recap/Actions/Closure/Adjourn</td>
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<tr>
<td>3rd Hour</td>
<td>1) M&amp;P qualification and control</td>
<td><strong>Session 4</strong></td>
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<td>2) Design development &amp; substantiation</td>
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<td></td>
<td>3) Manufacturing implementation</td>
<td>Design Development and Structural Substantiation</td>
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<td>4) Repair implementation</td>
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<td>4th Hour</td>
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<td><strong>Session 1</strong></td>
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<td>Applications &amp; Service Experiences</td>
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<td><em>Perspectives on critical safety issues, lessons learned and best engineering practice</em></td>
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<tr>
<td>Lunch (1 Hour)</td>
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<td><strong>Session 6</strong></td>
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<tr>
<td>5th Hour</td>
<td>FAA Welcome/Overview</td>
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<td><strong>Session 7</strong></td>
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<td>6th Hour</td>
<td>FAA Survey/Continued Data Collection</td>
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<td>Break (15 min.)</td>
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<td>7th Hour</td>
<td>Session 1</td>
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<td>8th Hour</td>
<td>Session 2</td>
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Breakout Sessions Intent

• Purpose to create a more casual situation for gathering your input on the four subject areas on which the workshop is focused

• Focus on the following bonded structures areas:
  – M&P Qualification and Control
  – Design Development and Structural Substantiation
  – Manufacturing Implementation & Experience
  – Repair Implementation & Experience

• Format of sessions
  – Introduction of Focus by discussion leaders
  – Followed by 45 minutes of group discussion
  – Each group will consist of approximately 30 participants
Breakout Sessions

• This group will be divided into four groups
• Group Assignments are posted outside this room
• Each group has been assigned a room
• Report to your assigned room tomorrow morning
• Once in your designated rooms the discussion leaders will switch from room to room to minimize disruption
Refreshment Breaks

• Each morning and afternoon there will be a refreshment break.
  – Wednesday Afternoon
    • 3:00 - 3:15 PM
  – Thursday
    • 9:50 - 10:10 AM
    • 3:30 – 3:45 PM
  – Friday
    • 9:10 - 9:30 AM
• Refreshments served outside doors to this room
FAA Approach to Composite Safety and Certification Initiatives

Evolving
- Certification and Service History
- Focused RE&D
- New Technology Considerations
- Internal Policies
- Industry Interface
- Detailed Background Data

Mature
- Rules & General Guidance
- FARs
- Advisory Circulars
- Policy Memos
- Training (Workshops, Short Courses, IVTs)
- Public Documents and Standards (e.g., Mil-Hdbk-17, SAE AMS, Contractor Reports)
Benchmark Bonded Structures

Objectives for Report(s) and Workshop

- Primary objective:
  
  Document the technical details that need to be addressed for bonded structures, including critical safety issues and certification considerations

Report(s) Title: “Survey and Evaluation of Bonded Structure Engineering Practices”
Secondary objectives

1) Give examples of proven engineering practices
2) Provide directions for research and developments
Benchmark Bonded Structures

Primary Deliverables

• Survey industry to benchmark critical technical issues and engineering practices for existing applications
• Develop FAA Technical Center Report(s) on critical technical issues and existing engineering practices
• Bonded Structure Workshops in 2004 to review the survey and draft FAA Technical Center Report(s)
  – June MIL-HDBK-17 meeting
  – Follow-on workshop in Europe (TBD)
• Late 2004 FAA policy covering the different engineering aspects of bonded structure
Today’s Schedule

• Introduction
  Curtis Davies (15 min.)

• Bonded Structures Overview
  Larry Ilcewicz (45 min.)

• FAA Survey/Continued Data Collection:
  John Tomblin/Curt Davies (60 min.)

• Break 3:00 to 3:15 PM

• A Rigorous Approach to Certification of Adhesive Bonded Structures & Repairs
  Max Davis, Australian RAAF (60 min.)

• Cessna Bonding Experience
  Andrew Kasowski, Cessna (30 min.)

• Propeller continued airworthiness & service issues
  Jay Turnberg (20 min.)

• Critical Factors Controlling the Durability of Bonded Composite Joints - Surface Preparation & the Presence or Absence of Pre-Bond Moisture
  John Hart-Smith, Boeing (40 min.)
Communications following the workshop

- Public website will post workshop presentations
  www.niar.wichita.edu/faa
- Please send your thoughts and notes to WSU
- All inputs will be considered in drafting FAA Report(s), which will be written and reviewed by selected experts
Information

• Workshop Website
  – http://www.niar.wichita.edu/faa

• FAA Technical Center Library
  – http://actlibrary.tc.faa.gov
  – Click on the banner "Search the Library's Catalog" on the home page to get to the document search function. You must search for the entire document number to find the reports.
  – All FAA AR reports from 1996 are available in PDF.

• Comment Return
  – John Tomblin
    • Attn: FAA Workshop
    • 1845 N. Fairmount
    • Wichita, KS 67260-0093
  – Email Comments to:
    • john.tomblin@wichita.edu
    • Subject: Bonded Structures Workshop