

# Analytical Techniques Task Group

Wichita,

Kansas

November 15, 2007



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# Task Group Charter

Develop a guide of generally accepted stress analysis methods used for the design and evaluation of composite repairs for approval submission.



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# Initiatives

- To provide guide content that is generally agreed upon to be accurate and the best information within the scope of our charter.
- Education for a better understanding of composite repair design.



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# Contents of Guide

## AIR 5946

### Design and Application of Composite Repairs for Thermosetting Composites

Introduction

Part I - Materials, Processes and  
Repair Design\*

Part II - Laminate Analysis\*

Part III - Joint Analysis\*



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# Part I – Materials, Processes and Repair Design

- 1.0 Scope
- 2.0 Introduction
- 3.0 Materials and Forms
- 4.0 Repair Design Considerations
- 5.0 Fastened Composite Joints
- 6.0 References

Status: Updating for ballot.



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# Part II - Laminate Analysis

- 7.0 Mechanical Property Development
- 8.0 Classical Laminated Plate Theory (CLPT)  
Analysis
- 9.0 Simplified Analysis Techniques

Status: Updating for ballot.



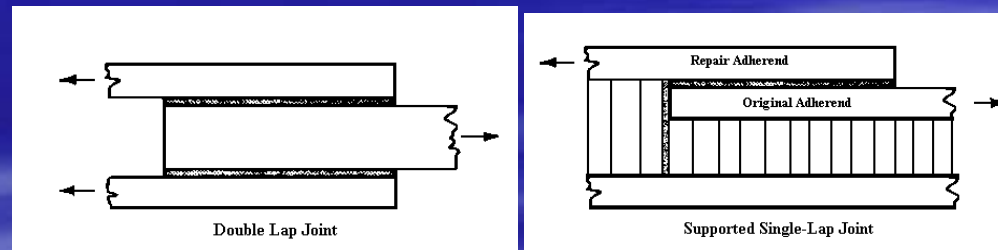
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## Part III – Joint Analysis

10.0 Introduction to Adhesively Bonded Joints

11.0 Adhesive Characteristics

12.0 Adhesively Bonded Double-Lap/Supported Single-Lap Joint Analysis



13.0 Adhesively Bonded Single-Lap Discussion

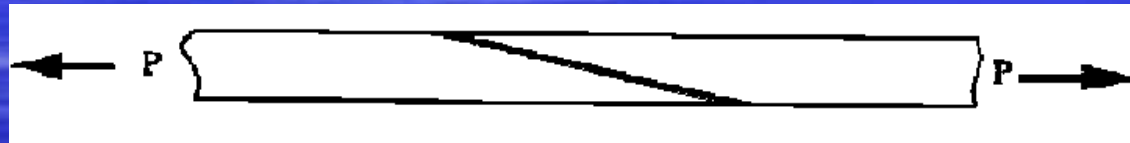




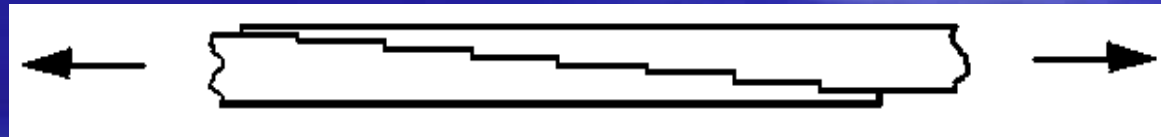
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## Part III – Joint Analysis (cont.)

### 14.0 Adhesively Bonded Scarf Joint Analysis



### 15.0 Adhesively Bonded Stepped-Lap Discussion



### 16.0 Finite Element Method

Status: Finalizing content.





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# Wichita Accomplishments

- Discussed role in document in relationship to CMH-17
  - Meant to be “Best Practices” primer not detailed guide
- Addressed remaining OEM comments concerning Section III



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# Completion Plan

- February 2008 – Telecon/webex  
Complete revisions and ballot preparations
- May 2008 – Final Review / Ballot Document
- CACRC meeting 2008 – TG reviews ballot comments
- 2009 – Document publication



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# Future Objectives

- What are Airlines problems today?
  - Bolted repairs?
- Coordination with Materials Group
  - Availability of data for analysis



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Thanks to all the participants whose time and hard work has made this document possible



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Questions?

Comments?