

Cargo AC – 25.855(c)

Guidance for Appendix F Part III Testing

**International Aircraft Materials & Fire Test Working Group
Seattle, WA March 6, 2013**

William Eidsmore, BCA Flammability

Participants

- Regulators
- Boeing
- Airbus
- Embraer
- C&D Zodiac
- Akro Fireguard

Across industry representation

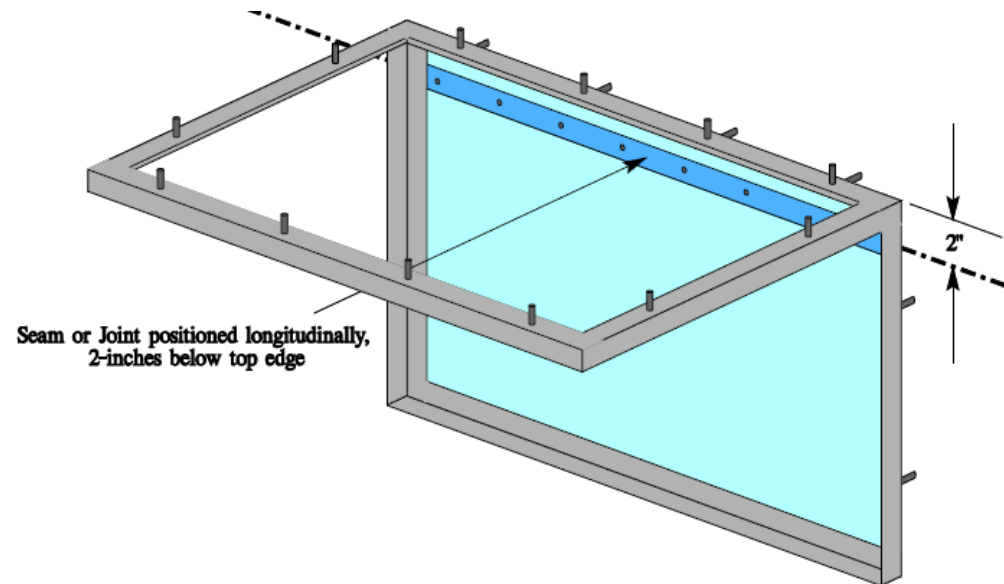
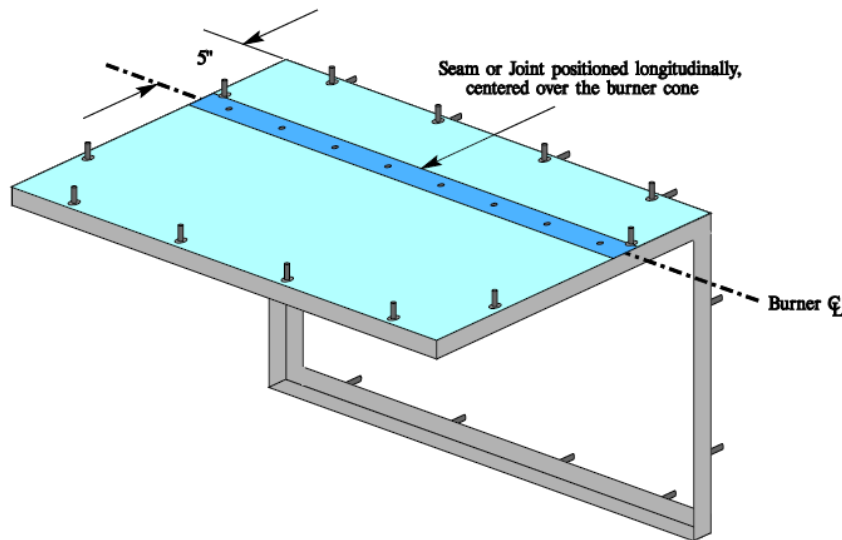
AC Purpose

- Define simplifications to testing acceptable to SMEs across industry.
- Level set industry on what constitutes acceptable abstractions in testing
- Collect various guidance sources into a single document
 - Cargo AC Proposal Rev 13 Rev 3_21_12.ppt
 - C&D.pptx
 - Airbus Design Principles_1.ppt
 - Marker-1011-cargotask.pdf
 - AC25-17
 - TN88/33
 - Fire Test Handbook

Simplified test guidance . All guidance in one document.

AC Topics

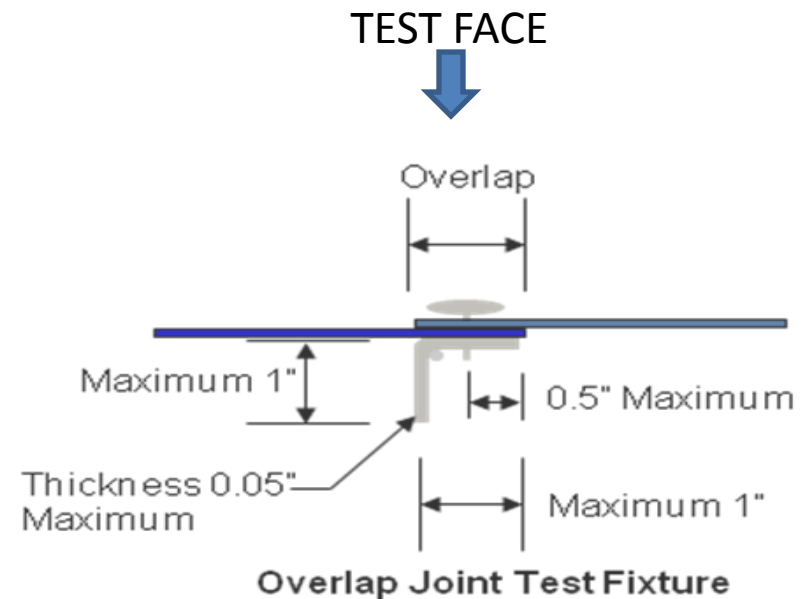
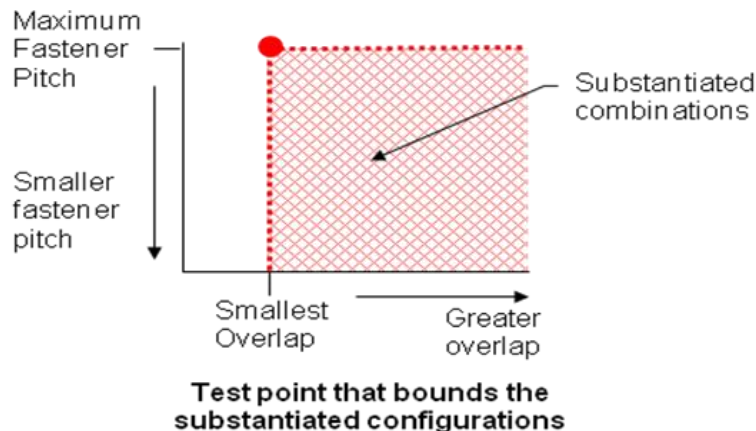
- Type of tests and fixturing
 - Horizontal, Vertical, Corner test
 - Optimal positioning of joints
 - Pinning or Clamping of specimens



Develop Specimen clamping (no pins) guidance

AC Topics

- Boundary condition (joint geometry) test methodologies
 - Standardized test configuration for cargo liner joints.



Standardize approach to testing design boundary conditions

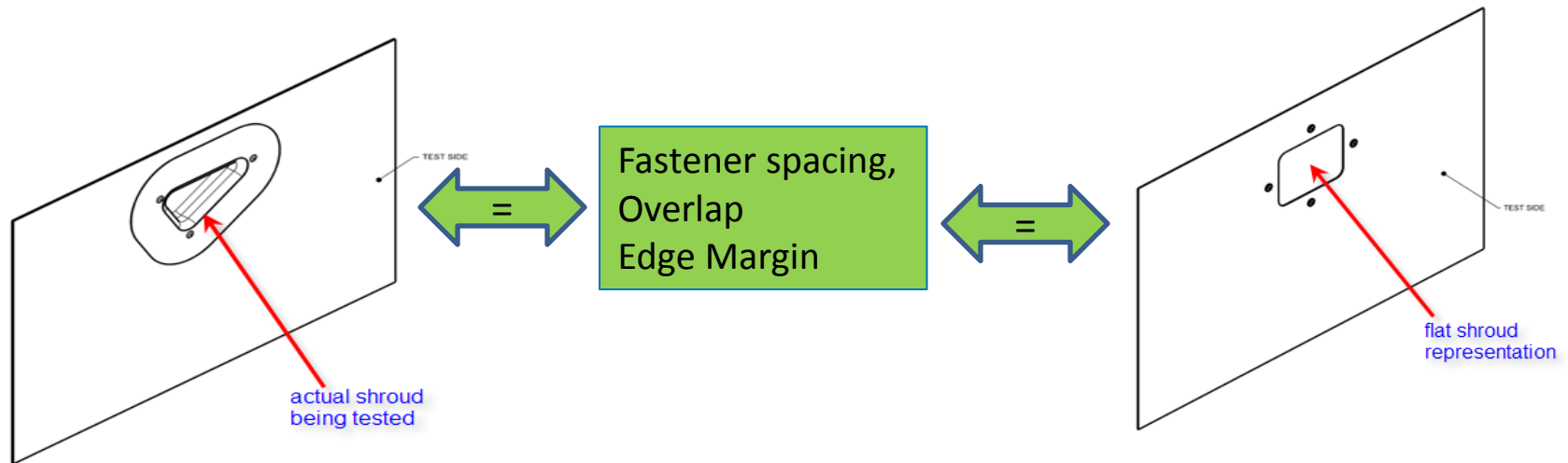
AC Topics

- Substitution categories
 - Materials
 - Metals
 - Fiberglass laminates
 - Finishes
 - Paints
 - Decoratives
 - Fastening systems
 - Materials
 - Sizing

Define substitutions with no appreciable effect

AC Topics

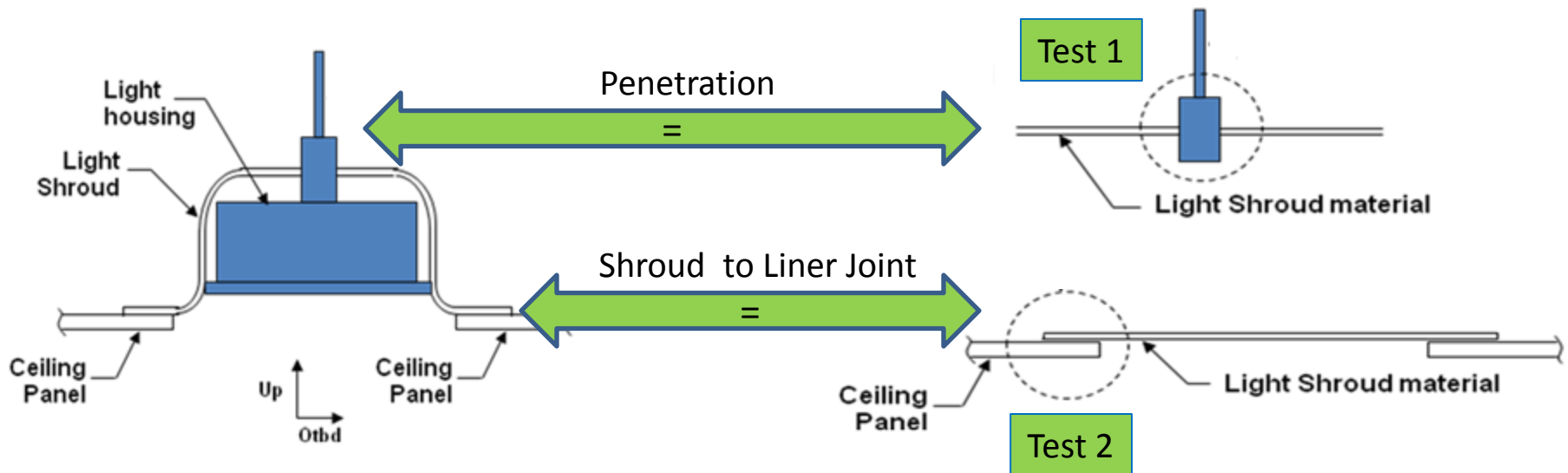
- Feature test guidance
 - Abstraction of a design to a simple test
 - Guidance for substantiating designs with simple test data



Develop guidance for use of parameters in cargo feature tests

AC Topics

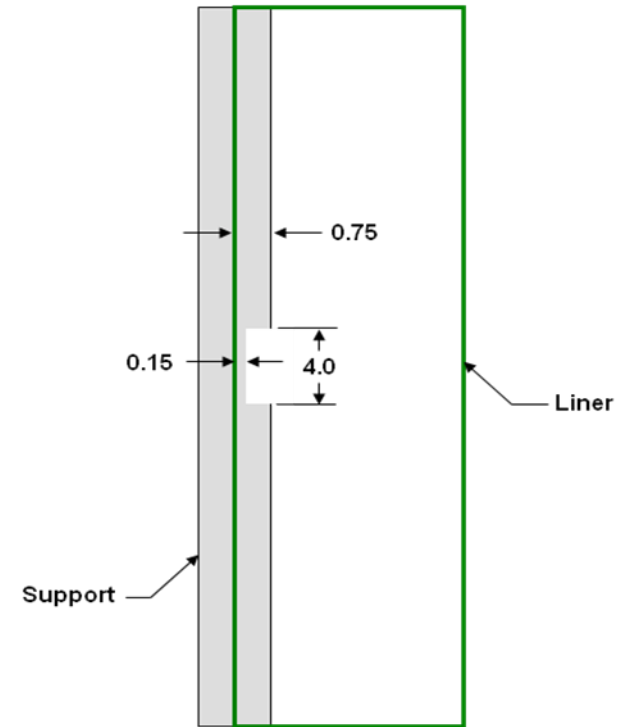
- Feature test guidance
 - Separation of design elements into several simple tests



Develop guidance for separating a design into simple tests

AC Topics

- Test Exclusion Areas
 - **Holes in ceiling panels** used to provide access for smoke detector sampling ports should not be larger than 3/8-inch in diameter. (Ref. AC25-17)
 - **Joints on cargo doors** are excluded from Appendix F Part III unless flame penetration poses a risk to critical systems.
 - **Joint attachment to or below cargo floor** or cargo conveyance system is considered outside the cargo liner definition and does not need to be oil burner tested.
 - **Small Unique Joints.**
 - The joint does not extend more than 4" and has a minimum overlap of 0.15"
 - The joint consists of materials that meet the requirements of Appendix F Part III



Example of Small Unique Joint

Define common non-critical design features

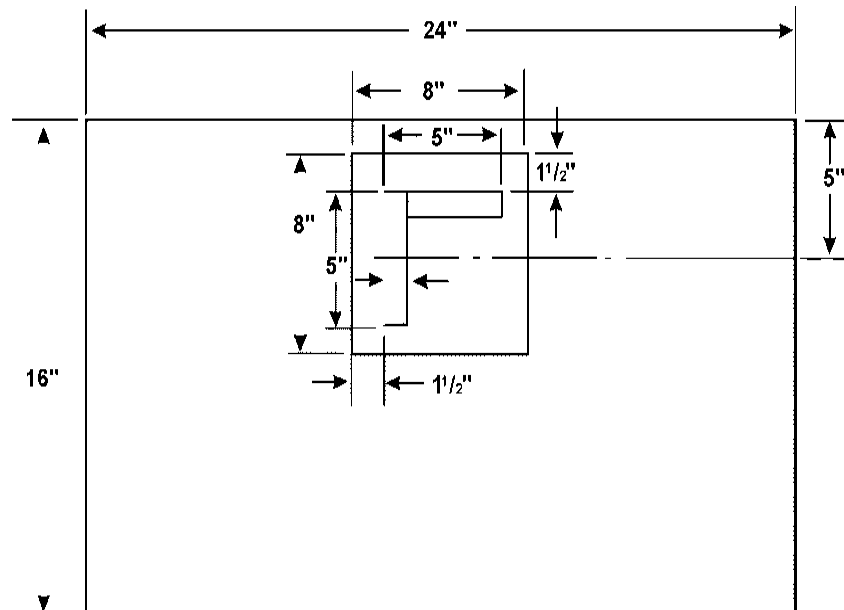
AC Topics

- BACKSIDE TEMPERATURE
 - Liner materials have the backside temperature requirement.
 - Clarify that the requirement is not for joint testing.
 - Clarify that vertical tests do not have the requirement
 - *This is supported by the original intent of the requirement to ensure liner material is non-porous to retain Halon and smoke during a fire.*

Clarify backside temperature requirements

Other Task Group Topic - Repairs

- Liner Repairs
 - Drafted by Akro Fireguard
 - Revised information from Fire Test Handbook Chapter 15



Example: square patch on standard damage

Presented separately by Akro Fireguard

Task Group Discussion Topics

- Backside burning guidance
- Test failures with assignable cause
- Standard joint support structure definition
- Material Thickness: test minimum and maximum versus just minimum
- Adhesives and seals in joints
- Metals substitutions
- Backside temperature clarifications
- Test data required to support AC proposal

Continue Task Group Collaboration