

MATERIALS FLAMMABILITY WORKING GROUP (ARAC TAEIG)

IAMFTWG TOULOUSE MEETING

JUNE 20, 2012

STATUS REPORT

BACKGROUND

- ARAC: Aviation Rulemaking Advisory Committee
- TAEIG: Transport Aircraft and Engine Interest Group
- Working Group: Given a specific task with a time limit, then disbands.
- Tasks: Proposed by FAA



History of Regulatory Development: Transport Type Aircraft Fire Safety

- Rules have expanded **reactively**; as incidents occur, they are evaluated and rules are made so that they will not re-occur.

Proposed Future of Fire Safety Development:

- Objective is **pro-active** rules for fire safety; determine what the performance standard should be in different areas when faced with realistic fire threats.
- Requires a complete, clean sheet of paper revision of flammability rules in order to get a comprehensive, logical structure.
- Should encompass all current regulations clearly, and make it clear what requirements will be for new materials and systems.

Safety Regimes

- In-Flight
 - fire threats should not present a direct hazard to the occupants and should allow the safe flight, landing and potential evacuation of the aircraft
- Post-Crash
 - sustain survivable conditions long enough to evacuate the aircraft

For each area of the aircraft:

- Nature and likelihood of ignition source.
- Likelihood of detection.
- Ability to mitigate.
- Proximity to occupants.
- Proximity to flight critical systems.

In Flight zones

- Accessible
- Inaccessible
- Waste Containment
- Cargo

Post crash performance

- Threat is a large, external pool fire.
- Protection for escape equipment.
- Limiting flame penetration into the cabin.
- Limiting flame spread within the cabin due to the involvement of cabin materials.

Federal Register Tasking

SUMMARY: The FAA assigned the Aviation Rulemaking Advisory Committee a new task to review and submit recommendations in response to the Federal Aviation Administration's approach to update, reorganize and improve the level of safety of requirements for flammability of materials.

The Task

The ARAC is asked to **consider the merits of the FAA's proposed approach** for a threat-based structure for part 25, Appendix F, and **make recommendations for improvement**, classification of the various parts of Appendix F, and **advisory material necessary for implementation**.

MEMBERS

NAME	COMPANY
Ralph R. Buoniconti	SABIC Innovative Plastics
Francisco Landroni	Embraer
Ian Lulham	Bombardier
Jean-Francios Petit	Airbus
Claude Lewis	Transport Canada
Scott Campbell	C&D Zodiac
Mike Miler	Schneller
David E. Lucas	Cessna Aircraft Company
Ed Nixon	Gulfstream
Jeff Gardlin	FAA
Kendall Krieg	Boeing
Cheryl Hurst	American Airlines
Jim Davis	AccuFleet
Robert Trimble	Weber
Thomas Livengood	BEAerospace
Becky Wulliman	Evonik
Phuong Ta	Goodrich
Serge Le Neve	DGA
Enzo Canari	EASA
Jean Claude Lerminiaux	Dassault
Dan Slayton	Boeing (alternate)
Dick Hill	FAA

Attempt to Draft:

- 25.853
- Appendix F
- Advisory materials (To Do List for Industry):
 - Advisory Circulars
 - NEW Test Reference Manual
 - Revised Handbook

Results

- The working group believed that the proposed threat-based organization for the flammability regulations was logical, practical and a more effective framework for regulation going forward than the current published regulations.
- The group believed that the resulting regulation draft, along with appropriate advisory material, would ultimately be simpler and more easily understood and enforced.

Results

- Is the threat based approach organized correctly?
- A threat based approach is a more rational and understandable policy than the current regulatory language. The new draft version of the regulation presented as a part of this report reflects what we think is the best organization. While the new draft regulatory language structure simplifies the regulations, we have not evaluated whether it simplifies compliance demonstration at the aircraft level. If we consider only the parts and constructions that are currently tested under the existing 25.853, the proposed regulation would result in a reduction in the number of tests to be performed.

Results

- **Is App. F I (Bunsen Burner) necessary for items covered with more stringent (Appendix F II-VII) tests?**
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- **The group finds appropriate to eliminate the need to perform Bunsen Burner testing on parts that are tested to a more stringent standard. However, Bunsen burner tests are still required in many areas where more stringent tests are not specified, as well as for 19 and under passenger aircraft. The broader question of superseding test methods with other, more stringent test methods is addressed in our Hierarchy section contained within this draft language.**

Results

- Are there regions within the aircraft not covered that should be?
- There are areas/materials/parts not covered that should be covered based on consistency with the threat-based concept. The working group has not reviewed accident and incident data to determine if the proposed changes would have affected outcomes in prior accidents and incidents. Where items are covered that were not previously covered, compliance effort and compliance cost to industry will be increased, at least initially.

Results

- **Can requirements be simplified while maintaining or improving safety?**
- **Requirements CAN be simplified (and the working group thinks that our draft of the regulations is simpler and clearer). While the text of the threat-based regulation may be simplified, we have not evaluated the extent to which showing of compliance has been simplified. We have increased the number of items evaluated for flammability, but eliminated redundant testing required on each item. The net change in testing effort required for all items is unknown.**

Results

- **How should non-metallic structure be handled? (e.g. Seats and airframe/fuselage)**
- **Non-metallic structure, as well as flammable metallic structure, is addressed within the threat-based regulation language. While we have placed the testing requirements logically within the draft regulation structure, there are not test methods for these applications. Test methods must be developed or refined before the new regulations can be implemented**

Results

- **What advisory material is needed to implement the new threat-based flammability safety structure?**
- **Along with the new threat-based regulation, the group recommends a comprehensive reconsideration of the existing AC material on flammability requirements. Whenever needed, new AC's will have to be developed to identify criteria for the showing of compliance with the new test requirements. In addition to new or revised Advisory Circulars, a newly created Test Reference specifying test methods and apparatus should be issued. The Reference will consist of relevant materials from the current Aircraft Materials Fire Test Handbook, revised as appropriate, and of new chapters to developed to describe the new test methods introduced by the new regulation. An updated Handbook should then be issued. This should all be done before or concurrent with issuing the new regulation.**

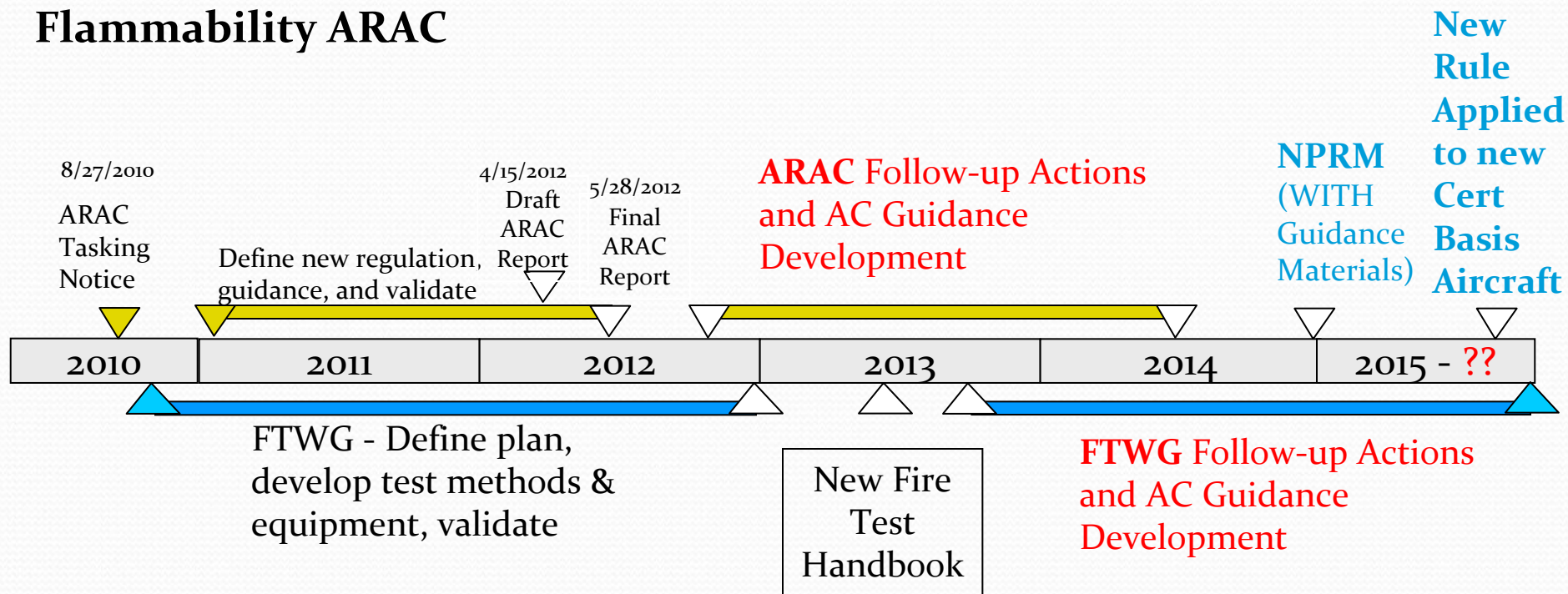
Benefits versus cost

- The current system, while flawed, maintains a VERY safe aviation industry.
- Since “low hanging fruit” have been harvested....
- And industry has in place MOC’s to do things in accordance with current regulations....
- Hurdle: How to move to a better organized, logical system when fewer immediate safety benefits are seen.
- If not now, when?

BCA Flammability Flammability ARAC – New Regulations

Timeline

Flammability ARAC



Fire Test Working Groups (FTWG) – 12 Task Groups

(Red Items are notional)

Compliance effort Reduction

- FTSG type industry groups for listed materials
- Hierarchy
- Size and spacing criteria, science based
- Engineering / non-aviation tests allowed



Advisory material development

- Before or concurrent with rulemaking



QUESTIONS?