



Federal Aviation  
Administration

# Development of a New Flammability Test for Aircraft Ducting

Presented to: The International Aircraft Material  
Fire Testing Working Group

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# Outline



- Background
- Project Objective
- Work Breakdown Structure
- Closing





## BACKGROUND

- The FAA initiated efforts to improve the fireworthiness of hidden areas in the aircraft (T/A Insulation) in 1995 after several incidents involving the thermal-acoustic insulation.
- Systems of interest in the hidden area includes thermo/acoustic insulation, aircraft ducting, wiring, etc.
- Aircraft ducting is currently certified using “12-second Vertical Bunsen Burner test (12VBB, Title 14 Code of Federal Regulations Part 25, Appendix F Part I (a)(ii))
- In 1997, FAA Technical Center concluded that the 12VBB test did not produce consistent results and it is not a good indicator of flammability characteristics.



SwissAir MD-11 Accident Investigation  
Reconstruction, 1998



## BACKGROUND (CONT.)

- In 2004, as part of the project baseline, the aircraft ducting materials were re-tested with the 12VBB test. They all passed the test.
- That same year, Intermediate-scale fire tests results showed that the 12VBB test was unable to properly predict the fire propagation performance of ducting materials when subjected to a realistic fire scenario.
- The FAA, in conjunction with the IAMFTWG (Stakeholders), chartered a project with the objective to develop a new test procedure to evaluate aircraft ducting materials.





# **Intermediate-Scale Test 092904T1**

**Fiberglass / Epoxy /  
Polyurethane Duct**

**September 29, 2004**

Current FAA Test: 12-sec Vertical Bunsen Burner

Intermediate-Scale Fire Test: New Fire Threat





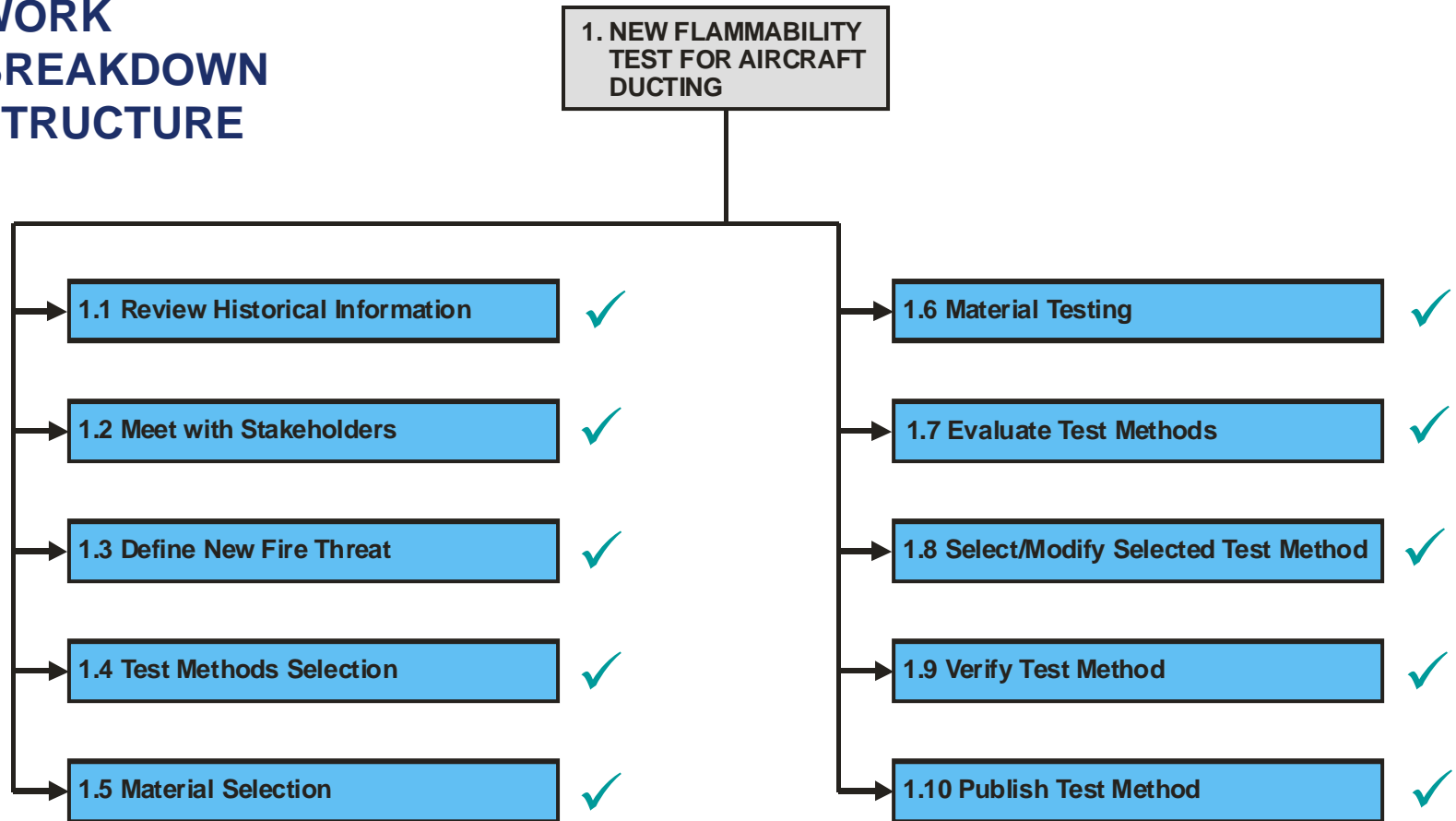
## PROJECT OBJECTIVE

Develop an improved fire test method for aircraft ducting that could adequately discriminate between poorly performing ducting materials and fire worthy ones when exposed to a realistic fire scenario.





# WORK BREAKDOWN STRUCTURE



✓ Completed Work

# 1.9 Verify Test Method



**12-Sec Vertical Bunsen Burner Test**  
(Passed current test, but burned during the  
Intermediate-Scale Fire Test)

**Developed Flammability Test For Aircraft  
Ducting** (14.5 cm, Exp. > 45 sec, Failed new test,  
same as Intermediate-Scale fire test)

## Material C (Poor Performer)





# 1.9 Verify Test Method



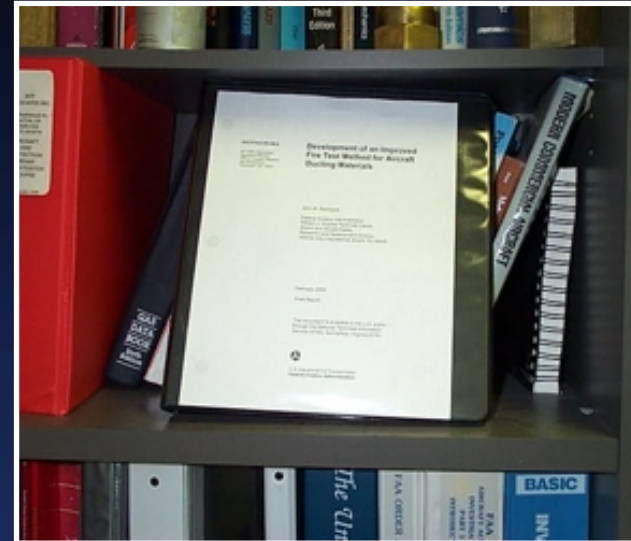
**Material AV (Fireworthy):** B.L = 4.4 cm, A.F.T. = 11 sec), passed





## 1.10 Publish Test Method

- Final report DOT/FAA/AR-08/4 was published on 11 February 2008
- A digital copy is available in our website:  
<http://www.fire.tc.faa.gov/reports/reports.asp>  
Search using the “Author” field and type in “Reinhardt”





# Questions?

