Development of a New Flammability Test for Aircraft Ducting

Federal Aviation Administration

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 include thermal/acoustic insulation, aircraft ducting, wiring, etc.

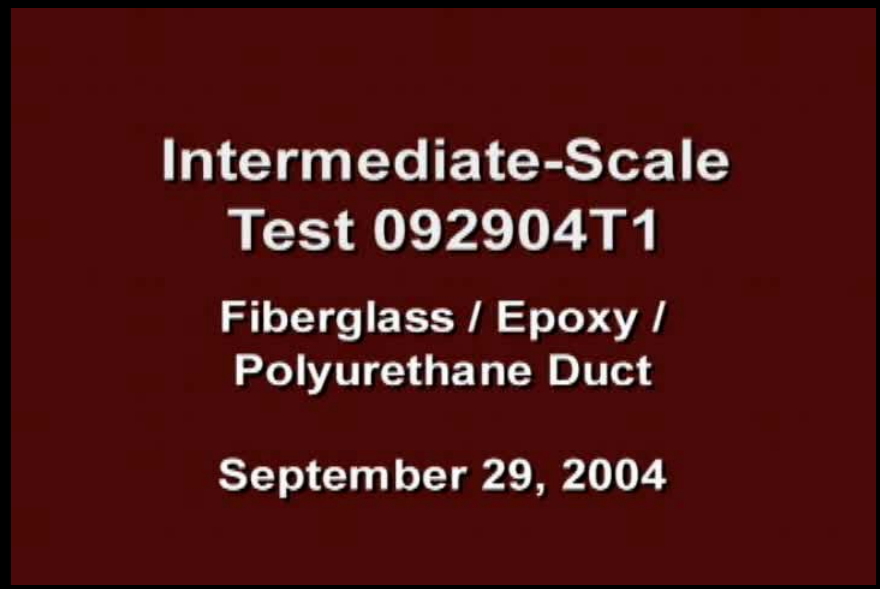
- Aircraft ducting is currently certified using “12-second Vertical Bunsen Burner test (12VBB, Title 14 Code of Federal Regulations Part 25, Appendix F Part I (a)(ii))

- In 1997, FAA Technical Center concluded that the 12VBB test did not produce consistent results and was 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.



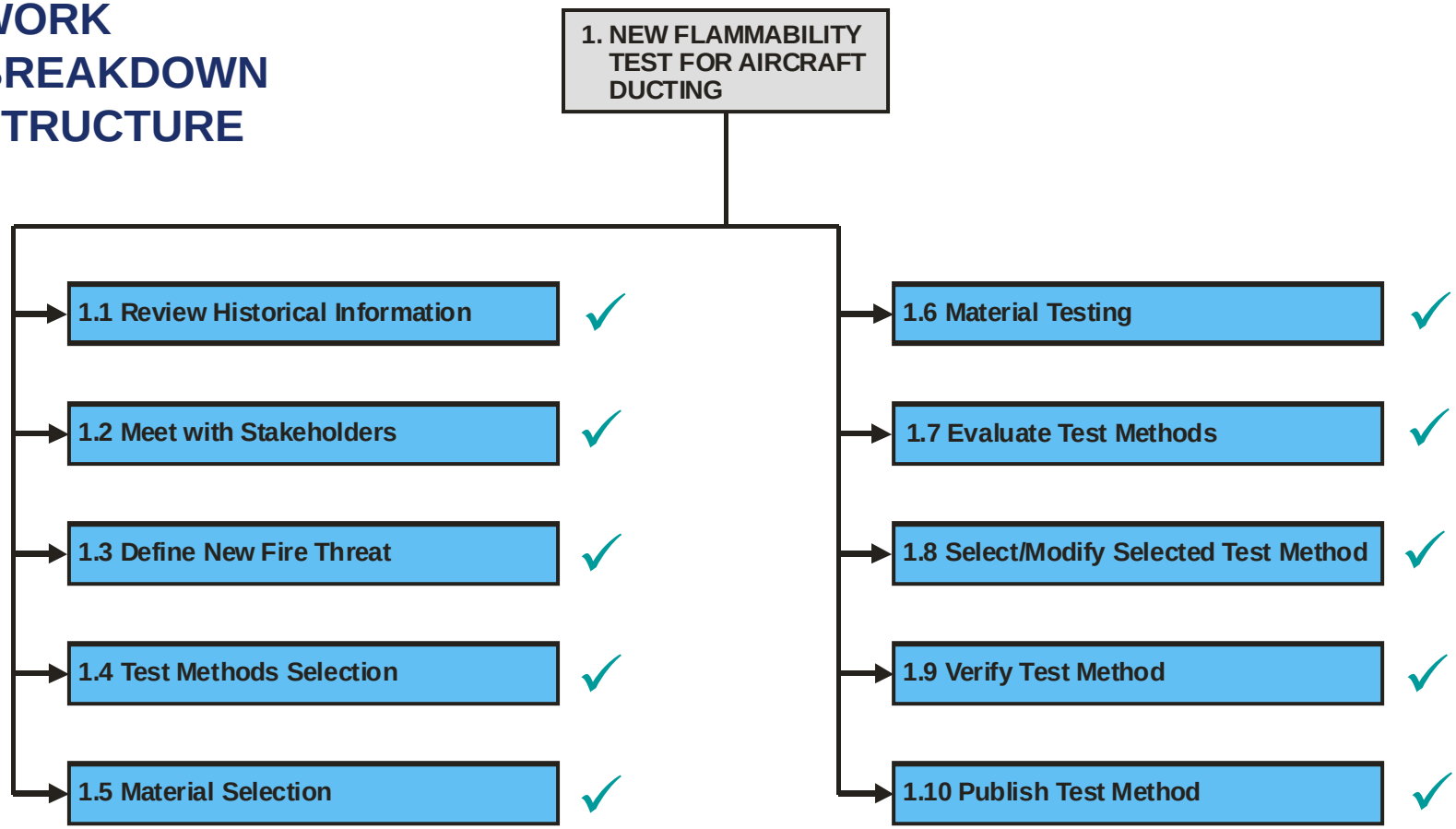
Current FAA Test: 12-sec Vertical Bunsen Burner

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)

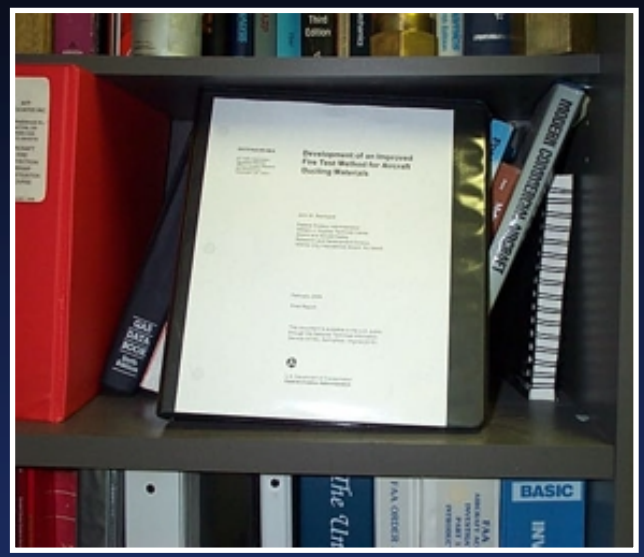
Material C (Poor Performer)

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?