Technical and Sociological Aspects of Qualifying Future Alternative Fuels in Aircraft

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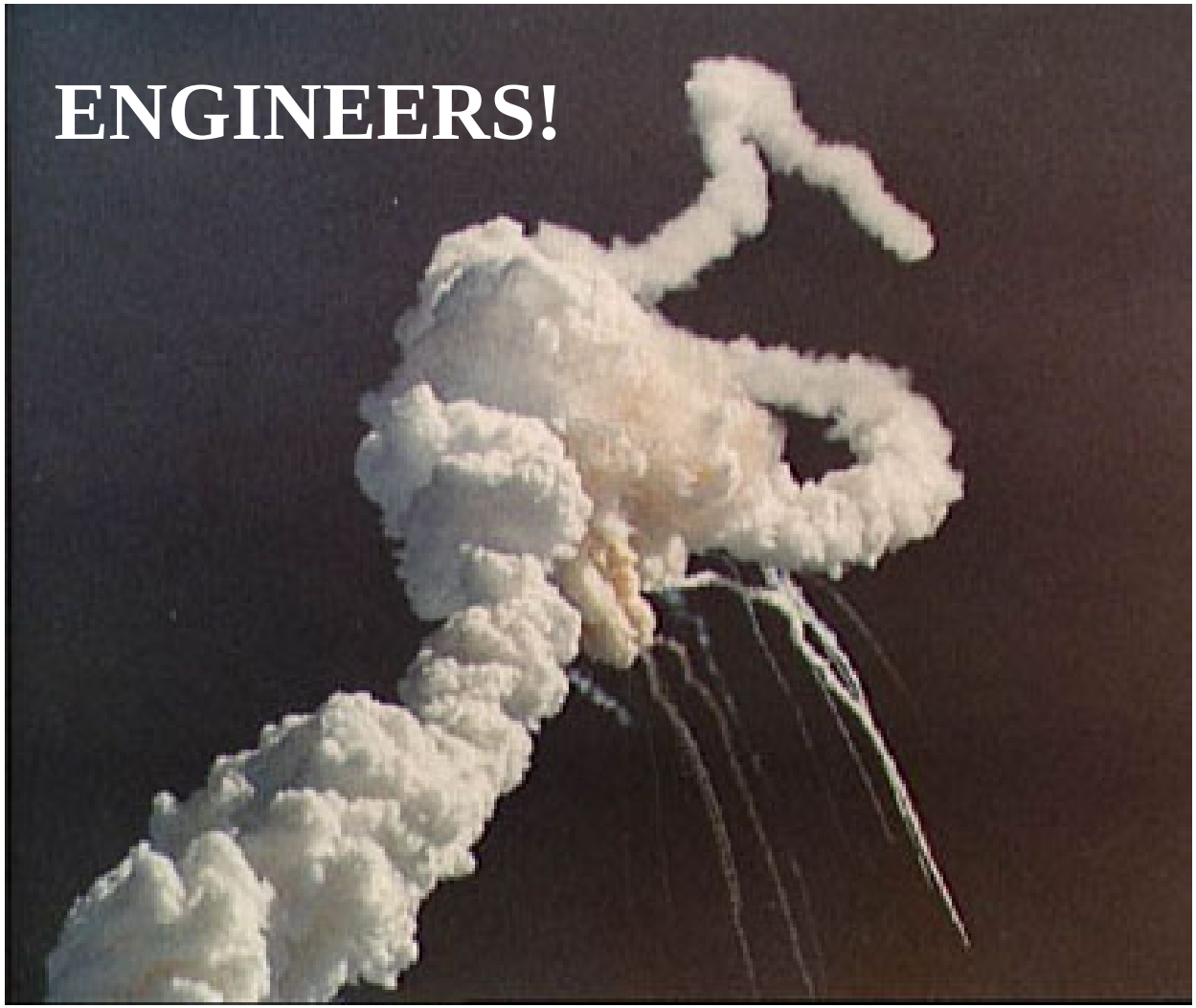
BLUF



An Issue of Scale

- Every Minute of Every Day 30% of the US Fuel Supply is on the Pipeline Between Houston and New York
- A Typical Batch of Jet Fuel is 100,000 bbl
  - 4.2 MM Gallons
  - 15.9 ML
  - $12+ Million Dollars
- A Potential Contamination of the Fuel Supply Threatened to Close Dulles for Two Weeks
- Bad Fuel Threatened to Shut Miami International which Only has a Two Day Supply

IS <> NOT IS

- The Logic of Specifications
  - Tests Sufficient to prove “IS” – The Box
  - Alternate Fuels may not fit – The Box
- Basic Logic has Worked for 50 Years
  - Lufthansa Fuel Control
    - » 3000 hr Hysteryesis Problem
    - » Brazil Slow to Upgrade Thermal Stability
  - New Zealand Lubricity Problem
    - » 10 incidents on 10 planes
    - » Guidance on Severe Hydrotreating
    - » OEMs Moved to Improve Pumps
- Now…

Fuel Icing Blamed

- Yesterday
  - Ice from water in fuel blamed
  - Fuel Problem?
  - Operation Problem?

- What Do We Do?

So Going Back to – The Box

- The Difference In Our Interests
  - You Want to Know What's In the Box
  - We Want to Know the Limits to the Box
- So What I Take Away Is
  - TSI Might Improve Our Box
  - DCN Might Change Our Box
  - Aromatics Research Could Direct Qualification for Our Box
  - Modeling Could Answer the Minimum We Need in Our Box

Defending Our Box

- There is only ONE Jet Fuel
  - The System does not, and will not, support multiple fuels
  - No opportunity for J85 or BioJet (in the FAME sense)
  - Any Alternative Must Be Drop-In Compatible
- You Help In Defining the Limits is Critical
  - I Welcome Your Input to the Emerging Fuel Section to this End

Come to Tampa

- ASTM Aviation Fuel Subcommittee
- Dec. 7-11
- Open Meeting

Aviation in itself is not inherently dangerous. But to an even greater degree than the sea, it is terribly unforgiving of any carelessness, incapacity or neglect.

— *Captain A. G. Lamplugh, British Aviation Insurance Group, London. Circa early 1930's.*