



# REAL LIFE ADVENTURES IN BURNTHROUGH TESTING

Jim Davis, AccuFleet  
Chad Garvey, Unifrax

# HOW RELIABLE IS IT?

- *Does the Flap of a Butterfly's Wings in Brazil set off a Burnthrough Failure in Texas?*
- **NO**
- Can I tell my Six Sigma Master Black Belt that the test will produce less than 3.4 anomalous results in 1,000,000 tests?
- **NO**

# HOW DOES IT COMPARE TO OTHER OIL BURNER TESTS (Seat Cushion or Cargo Liner) ?

- About the same – maybe a little better...

OUR FIRST COMPLETE  
DEVELOPMENT AND  
CERTIFICATION PROJECT:

UNIFRAX

FyreWrap® Combi-Film

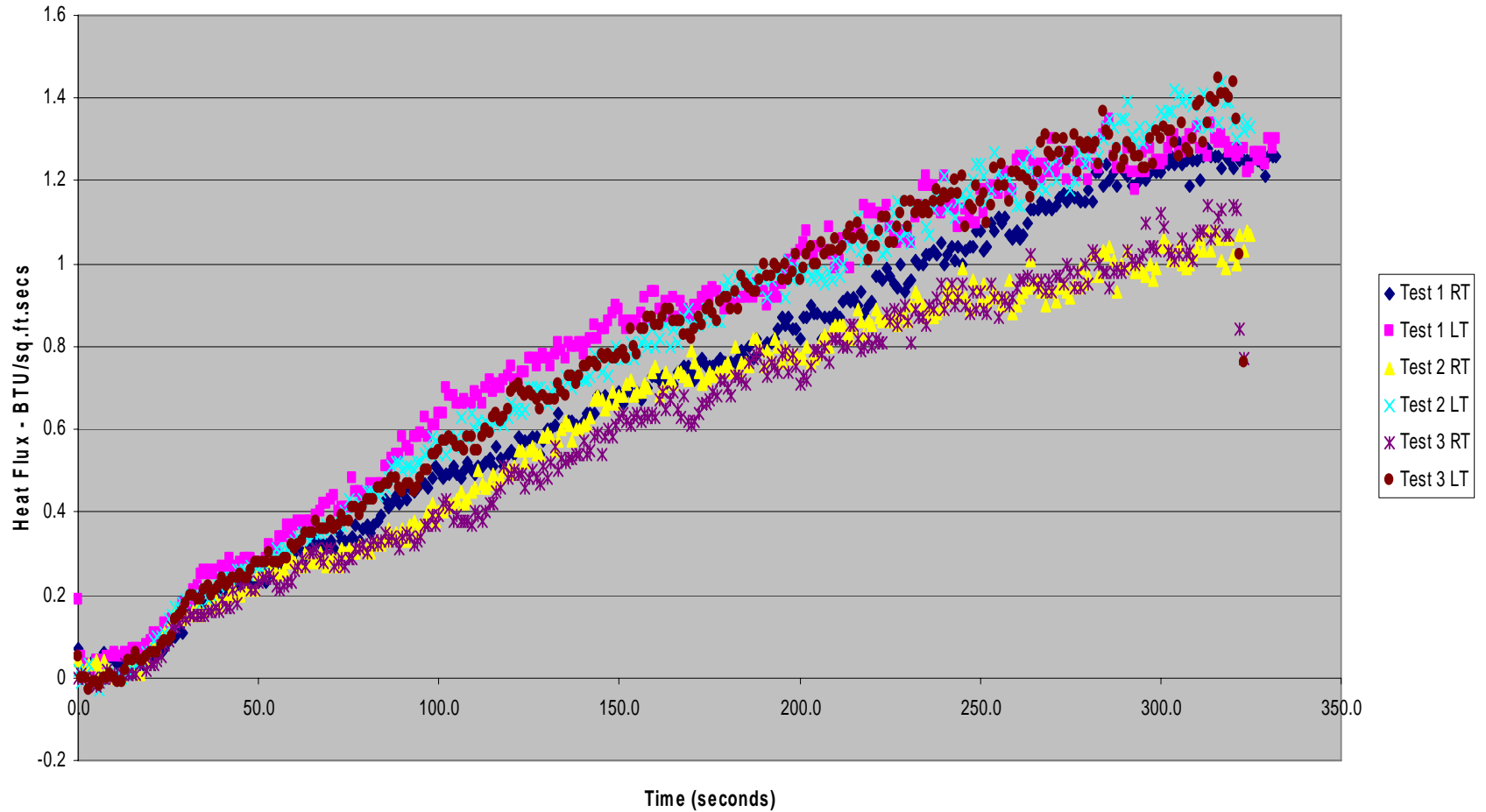
Chad Garvey

# DEVELOPMENT

- Formulation/Construction
- Process Variables
- Nominal targets, repeatability
- Extremes testing

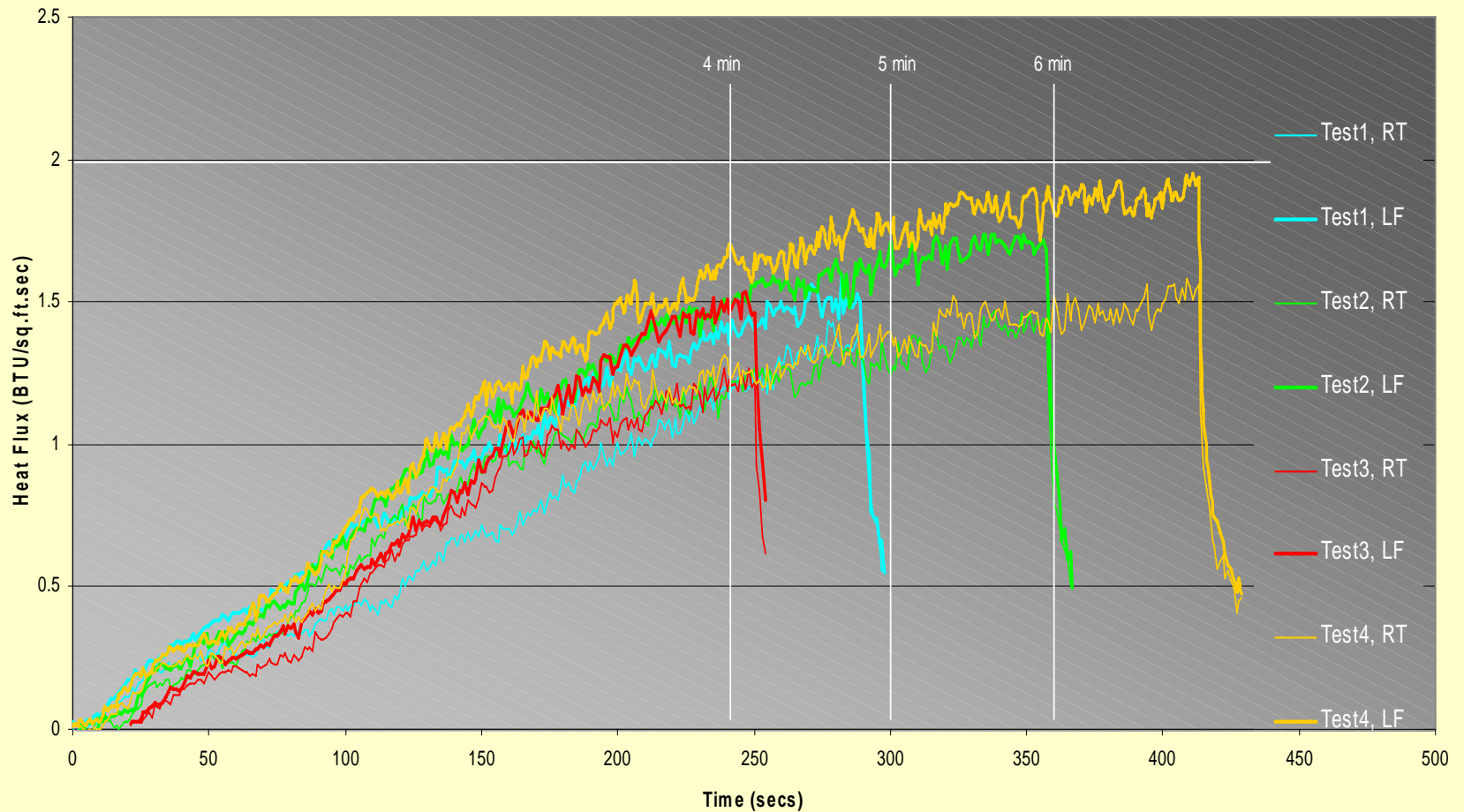
# Prototype

FyreWrap 779905046 Flammability Certification Runs....1/12/07  
FAR 25.856(b) Burnthrough Test - Backside Heat Flux  
2 layers 1" 0.42pcf Microlite AA Premium NR



# Design Verification

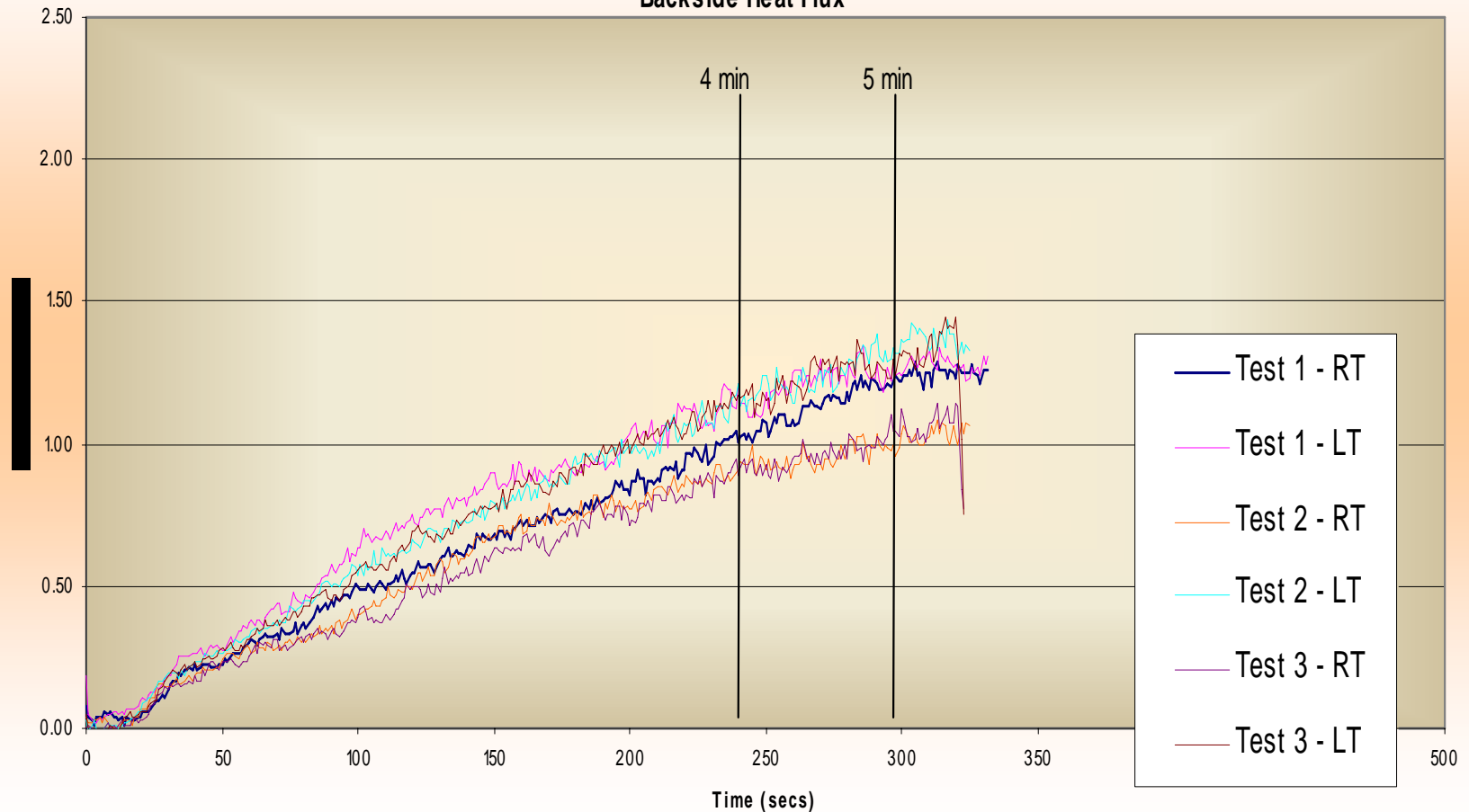
Unifrax FyreWrap Combi-Film 779905046 - S4  
2 layers - 1 inch, 0.42 pcf Microlite AA Premium NR  
FAR 25.856(b) Burnthrough Test - Backside Heat Flux - 21 September 2006





# Certification Burns

FAR 25.856(b) 1/12/07 Certification Tests  
Unifrax FyreWrap Combi-Film 779905046-S4, lot 6251/6362  
2 layers - 1 inch, 0.42 pcf Microlite AA Premium NR  
Backside Heat Flux



# CERTIFICATE



FLAMMABILITY CERTIFICATE

FAA REPAIR STATION

CERTIFICATE NO. 002415705

THE BURNTHROUGH RESISTANCE OF  
THERMAL/Acoustic INSULATION MATERIALS

Client :	Unifrax Corporation	Test No.:	A-112307				
P. O. No.:	254228	Date:	1/23/2007				
		Work Order #	117				
<b>MATERIAL DESCRIPTION</b>							
Type of Material:	Unifrax Pyrowrap Comp-film						
Material Part Number:	779810041004						
Mfg. Supplier:	Unifrax Corporation						
Color:	Cream/ivory						
Pattern:	NonWoven						
Thickness:	0.6mm @ 4 PSF						
Batch/Lot Number:	Lot # 676111867						
Description of Material:	Fire Barrier (Bio-Soulter Paper) Film Laminate						
<b>TESTING DATA</b>							
Conditioning Date:	1/11/2007	Conditioning Time:	10:00 AM				
Testing Date:	01/23/07	Testing Time:	10:48 AM				
<b>PRE-CALIBRATION</b>							
BTU 30 SECOND AVERAGE	15.3						
SEVEN THERMOCOUPLES 30 SECOND AVERAGE	1887	1915	1929	1942	1934	1965	1906
INTAKE AIR SPEED	FUEL TEMP	ROOM TEMP					
2.75	83	155					
<b>TEST RESULTS</b>							
SPECIMEN NUMBER	TIME OF BURNTHROUGH	BACK SIDE HEAT FLUX MAX					
		LEFT SIDE	TIME OF MAX.	RIGHT SIDE	TIME OF MAX.		
Specimen 1	N/A	1.35	10:53:10 AM	1.28	10:55:59 AM		
Specimen 2	N/A	1.42	11:24:19 AM	1.38	11:24:26 AM		
Specimen 3	N/A	1.45	11:54:27 AM	1.14	11:54:24 AM		
<b>POST-CALIBRATION</b>							
BTU 30 SECOND AVERAGE	15.4						
SEVEN THERMOCOUPLES 30 SECOND AVERAGE	1907	1923	1941	1933	1944	1967	1914
INTAKE AIR SPEED	FUEL TEMP	ROOM TEMP					
2.19	80	151					
COMMENTS:	All specimens ran a total of 6 minutes per test.						
TEST RESULTS:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL						
FAA FAR § 25.358 (b), APPENDIX F, Part VII - Test Method To Determine the Burnthrough Resistance of Thermal/Acoustic Insulation Materials							

WE UNDERSIGNED AND APPROVE HEREBY:

*Ethel J. Dawson*

Ethel J. Dawson, Repairman Certificate Number 002415705

FORM NO. 131

# STATUS FROM WHERE I SIT:

- Test works well enough to develop and certify materials.
- We should all continue our efforts to improve this (and other) oil burner tests.
- We should continue to develop the sonic burner to assure many sources of testing.

QUESTIONS?

