Introduction

- Insulation burnthrough test method evaluation within lab and lab to lab consistency
  - Sonic burner
    - 2 stator configurations tested so far
    - Testing 3rd configuration for phase 3
  - PAN felt material test samples used
    - Good repeatability for burnthrough time
Purpose of Phase 3

- **Standardize Fuel Nozzle**
  - Monarch fuel nozzles commonly used in burnthrough testing
  - Quality control is lacking
    - Actual vs. rated flow rate
    - Fuel spray pattern
  - Delevan nozzles found to be much more consistent
  - Improved test result repeatability with Delevan over Monarch

- **Conduct comparative fuel nozzle testing at FAA T.C.**
  - COMPLETED

- **Adjust igniterless burner settings to achieve BT times similar to old stator configuration with igniters**
  - COMPLETED

- **Conduct “Phase 3” of study using Delevan nozzles and new burner settings**
  - Currently in progress
Phase 3 of Study

• Phase 3 differs from Phase 2 in the following manner:
  – Delevan 6.0 gal/hr, 80-degree, solid spray fuel nozzles will be used by all labs

• Phase 3 is the same as Phase 2 in all other manners:
  – Stator position and air pressure
  – Only PAN materials are tested
    • 5 PAN-8579 light felt material
    • 5 PAN-8611 heavy felt material

• Delevan nozzles are available to all burnthrough test labs
  – Task group meeting

• Phase 3 status
  – Delevan fuel nozzles, PAN test samples, and detailed instructions are provided
  – 9 labs currently involved
  – 6 labs have received samples
    • Shipping issues for 3 labs
  – 2 labs have returned data
Phase 3: Test Results

8579 Burnthrough Times

8611 Burnthrough Times

% Standard Deviation within Labs
4.3%

4.1%
Phase 3: Test Results

8579 Average Burnthrough Times

- Sample ID: A, B, C, D, E, F, G, H, I, J, K
- Burnthrough Times: 241, 0, 0, 0, 0, 0, 0, 0
- % Standard Deviation Overall: 17.0%

8611 Average Burnthrough Times

- Sample ID: A, B, C, D, E, F, G, H, I, J, K
- Burnthrough Times: 260, 0, 0, 0, 0, 0, 0, 0
- % Standard Deviation Overall: 23.7%

~1.5 minute difference
~2.5 minute difference
Phase 3: FAATC Test Results

- **Good repeatability within each lab**
  - ~4.3% Std Dev for PAN-8579 felt material
  - ~4.1% Std Dev for PAN-8611 felt material

- **Reproducibility among labs should improve**
  - ~17.0% Std Dev for PAN-8579 felt material
  - ~23.7% Std Dev for PAN-8611 felt material

- **Investigate reason for burnthrough time difference**
  - Burner configuration?

- **Need more data for comparison to Phase 1**
  - Is the new configuration equivalent to the old stator setup?
  - Has repeatability and reproducibility improved?
Questions?

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