



**FLAMMABILITY SUBSTANTIATION REPORT –
THERMAL / ACOUSTIC INSULATION –
BOMBARDIER, INC. MODEL CL-600-1A11 (CHALLENGER 600) SN 1059**

Report #A081215-01FSR

For: Capital Aviation, Inc.

TABLE OF RELEASES

RELEASES				
LEVEL	DESCRIPTION	DATE	PREPARED BY	REVIEWED BY
IR	Initial Release	08/24/15	<i>Mathew Cox</i> Mathew Cox	<i>Off A. [Signature]</i>

1.0 INTRODUCTION

This report documents and substantiates, by comparison, the insulation materials defined in Table 4.0-2 to show compliance with the flame propagation requirements of 14 CFR § 25.856(a) at Amendment 25-111 to support Capital Aviation, Inc. with a major alteration to Bombardier, Inc. Model CL-600-1A11 (Challenger 600) SN 1059. The only installation that is authorized is with the Webbertek, P/N FP-5000, insulation material installed using DAP Landau Top and Trim adhesive.

2.0 FAA REGULATIONS

§25.856 Thermal/Acoustic insulation materials.

- (a) *Thermal/acoustic insulation material installed in the fuselage must meet the flame propagation test requirements of part VI of Appendix F to this part, or other approved equivalent test requirements. This requirement does not apply to "small parts," as defined in part I of Appendix F of this part.*

[Amdt. 25-111, September 02, 2003]

3.0 DISCUSSION

3.1 Substantiation by Comparison

The certification basis of the Bombardier, Inc. Model CL-600-1A11 is through Amendment 25-37. 14 CFR § 25.856 was not introduced until Amendment 25-111; therefore, the thermal / acoustic insulation is required to meet 14 CFR § 25.853(b) at Amendment 25-32 per the certification basis of the aircraft.

Based upon customer furnished information, the alterations performed on Bombardier, Inc. Model CL-600-1A11 (Challenger 600) SN 1059 are identical to alterations performed by Capital Aviation, Inc. on Dassault Aviation Model Falcon 2000 SN 003 with respect to material part numbers, lot number, and installation methods.

The thermal / acoustic insulation installed on Dassault Aviation Model Falcon 2000 SN 003 was tested to 14 CFR § 25.856(a) at Amendment 25-111. 14 CFR § 91.613(b) at Amendment 91-290, 14 CFR § 121.312(e) at Amendment 121-330, and 14 CFR § 135.170(c) at Amendment 135-103 state:

"Thermal/acoustic insulation materials. For transport category airplanes type certificated after January 1, 1958:

- (1) *For airplanes manufactured before September 2, 2005, when thermal/acoustic insulation is installed in the fuselage as replacements after September 2, 2005, the insulation must meet the flame propagation requirements of Sec. 25.856 of this chapter, effective September 2, 2003, if it is:*
- (i) *Of a blanket construction or*
 - (ii) *Installed around air ducting."*

While the certification basis of the aircraft does not require the new thermal / acoustic insulation to meet 14 CFR § 25.856(a), the operating rules of the aircraft do; therefore, based upon this discussion, the test results from Dassault Aviation Model Falcon 2000 SN 003 are acceptable to substantiate the test requirements of 14 CFR § 25.856(a) for Bombardier, Inc. Model CL-600-1A11 (Challenger 600) SN 1059.

4.0 PREVIOUS TEST REPORTS AND MATERIALS

Table 4.0-1 lists the documents that were previously issued and approved. Table 4.0-2 defines the previously tested materials. The test results approval and test observation sheets are included in Appendix A. The reports in their entirety are on file at Capital Aviation, Inc.

TABLE 4.0-1 – TEST DOCUMENTS

Document Number	Title
A081215-01FP Rev. IR	Thermal / Acoustic Insulation Test Plan – Dassault Aviation Model Falcon 2000 SN 003
A081215-01FR Rev. IR	Thermal / Acoustic Insulation Test Results – Dassault Aviation Model Falcon 2000 SN 003

TABLE 4.0-2 – PREVIOUSLY TESTED MATERIALS

Test Articles	Component	Supplier	Part Number/Description
A081215-01FP-1 & A081215-01FP-2	Thermal / Acoustic Insulation	Webbertek	FP-5000, Proteck Thermal Blanket
	Adhesive	Dap	Landau Top and Trim

5.0 CONCLUSION

The flame propagation test results defined in document #A081215-01FR Rev. IR, “Thermal / Acoustic Insulation Test Results – Dassault Aviation Model Falcon 2000 SN 003” are official test results that meet the criteria put forth in 14 CFR § 25.856(a) at Amendment 25-111; therefore, based on the discussion defined in § 3.1, the thermal / acoustic insulation being installed on Bombardier, Inc. Model CL-600-1A11 (Challenger 600) SN 1059 is substantiated by comparison.

Approval of this report will be documented on FAA Form 8110-3, “Statement of Compliance with Airworthiness Standards.”

APPENDIX A

**Test Results Approval
&
Test Observation Sheets**

AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION			
2. MAKE Bombardier, Inc.	3. MODEL NO. CL-600-1A11	4. TYPE (Aircraft, Engine, Propeller, etc.) Aircraft	5. NAME OF APPLICANT Capital Aviation, Inc.

LIST OF DATA	
6. IDENTIFICATION	7. TITLE
Report: A081215-01FSR Rev. IR Date 8/24/15	FLAMMABILITY SUBSTANTIATION REPORT – THERMAL / ACOUSTIC INSULATION – BOMBARDIER, INC. MODEL CL-600-1A11 (CHALLENGER 600) SN 1059 Note: 1. The flammability aspects only of the above listed data are approved herein. It indicates the data listed above demonstrates compliance only with the regulations specified by paragraph and subparagraph listed below as "Applicable Requirements." 2. This form does not constitute FAA approval of all the engineering data necessary for substantiation of compliance to necessary requirements for the entire alteration/repair. Compliance with additional regulations may be required.
=====	=====
END	END
=====	=====

8. PURPOSE OF DATA
 In support of a major alteration to Bombardier, Inc. Model CL-600-1A11 SN 1059.

9. APPLICABLE REQUIREMENTS (List specific sections)
 14 CFR § 25.856(a) at Amendment 25-111

10. CERTIFICATION -Under authority vested by direction of the Administrator and in accordance with conditions and limitations of appointment under 14 CFR Part 183, data listed above and on attached sheets numbered None have been examined in accordance with established procedures and found to comply with applicable requirements of the Airworthiness Standards Listed.

Recommend approval of these data
 Approve these data

I (We) Therefore

11. SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)	12. DESIGNATION NUMBERS(S)	13. CLASSIFICATION(S)
Aviation Consulting & Engineering Solutions, Inc. K.C. Campbell <i>K.C. Campbell</i>	DERT-230220-CE	Structures



AVIATION CONSULTING &
ENGINEERING SOLUTIONS, INC.

FLAME PROPAGATION TEST OBSERVATION SHEET

Customer: Capital Aviation, Inc. Customer P/O: 25021 Report NO.: A081215-01FR Rev. IR
 Conditioning Date: 08/17/15 Conditioning Time: 10:00 AM Specimen P/N: A081215-01FP-2
 Test Date: August 21, 2015 Aircraft: Dassault Aviation Model Falcon 2000 SN 003

TEST METHOD

Flammability and Flame Propagation Characteristics of Thermal/Acoustic Insulation Material Per
 14 CFR § 25.856(a) & 14 CFR § 25 Appendix F Part VI

TEST REQUIREMENTS

*There may be no failures on any one of the 3 test specimens. If a failure occurs, an additional 7 specimens may be tested. The results of all 10 specimens (including the initial failure) must be averaged and must meet the requirements. None of the additional 7 specimens may fail either requirement.

TEST MODE:	RADIANT PANEL	FLAME PROPAGATION:	<2 INCHES
RADIANT HEAT FLUX:	1.5 ± 0.075 BTU/ft²-sec	AFTER FLAME TIME:	<3 SECONDS
CALIBRATION DATA			
Controller Temperature (°F):		Chamber Temperature (°F):	
Calorimeter Position	Zero	One	Two
Heat Flux (BTU/ft ² -sec)	1.48	1.46	1.42
			Post-Test
			X

POST TEST RESULTS

Specimen No.	Flame Propagation (in.)	After Flame Time (sec.)	Comments (melting, shrinkage, warping)	Test Criteria	
				Pass	Fail
1	0.00	0.00		X	
2	0.00	0.00		X	
3	0.00	0.00		X	
4					
5					
6					
7					
8					
9					
10					
Average	0.00	0.00			
<u>PASS</u> X	<u>FAIL</u>	<u>TIME</u> 3:40 PM	Conducted By: Quang Nguyen	Witnessed By: Kevin Campbell <i>Kevin Campbell</i>	