

**AMSAFE AVIATION INFLATABLE AND STANDARD RESTRAINT
SYSTEMS**

POST INCIDENT TEST REPORT

For

CESSNA AIRCRAFT TAIL NUMBER N14685

NTSB ACCIDENT NUMBER: DFW07LA078

Prepared for:

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Revision History

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1.0 APPLICABLE DOCUMENTS

The following reference documents, at their latest revision, form a part of this document to the extent specified herein.

AmSafe Documents

AmSafe Drawing No. 508358
AmSafe Work Instr. WI-I-299-7
Amsafe Specification E508645
Operation Procedure OP-670

Electronic Module Assembly Dual/Single Sensor
Electronic Module Assembly
Product Specification for Shock Sensor Element
Control of Inspection, Measuring and Test Equipment

2.0 INTRODUCTION

This test report describes the testing methodology and results required to qualify the AAIR Electronics Module Assembly (EMA) for installation into Part 23 aircraft. The tests outlined in this document demonstrate the compliance of the EMA as required per the production drawings and work instructions as listed in the Applicable Documents.

2.1 PURPOSE

The purpose of conducting this post incident investigation (NTSB Accident No.: DFW07LA078) is to verify that the EMAs, part number 508358-421, serial numbers 31OCT06-10 (front) and 15DEC06-79 (rear), installed on Cessna aircraft, tail number N14685, as a part of the completed inflatable restraint system were manufactured in accordance to production requirements and functioned properly at the time of the incident.

2.2 TEST DISPOSITION

Testing was performed at the AmSafe manufacturing facilities, Phoenix, AZ on May 16, 2007. Testing was witnessed by Bradley Roon, FAA Manufacturing Inspection representative. The AmSafe points of contact are Doris Tilton, Quality Manager, Lee Langston, Field Service Rep./Technical Support and Kevin Keeslar, Engineering Manager.

The tests required to accept an EMA is in two parts. The first test inspects the circuitry of the assembly. The test determines the output voltage and open circuits as required by the system to perform correctly. The second test inspects the trigger timing, also known as the "time to fire". The test ensures that the unit will send a signal to the system when subjected to a 21g/60ms or 26g/50ms crash pulse as defined in production drawing 508358 and the sensor specification E508645

At the conclusion of the tests, as mentioned in the above paragraph, no anomalies were found and the units performed as designed.

3.0 SUMMARY OF TESTING

EMA Part Number: 508358-421
 EMA Lot Number: 10090016
 EMA Serial Number: 31OCT06-10
 Date of manufacture: A1006

Reference Document	Test Sequence	Test Requirement Description	Actual	Pass/Fail
508358	Note 1.a	Verify voltage output is greater than 7.0 volts across pins A & B.	7.34 VDC	Pass
508358	Note 1.b	Verify open circuit across pins B & C.	Open	Pass
508358	Note 1.c	Verify open circuit across pins B & D	Open	Pass
508358	Note 4	Module Trigger time when subjected to a 14.54g/43ms sawtooth pulse. Trigger timing is 37 +/- 2 ms.	38.6 ms	Pass
508358	Note 5	Module Trigger time when subjected to a 17.5g/35 ms sawtooth pulse. Trigger timing is 29 +/-2 ms.	29.5 ms	Pass

EMA Part Number: 508358-421
 EMA Lot Number: 3500403
 EMA Serial Number: 15DEC06-79
 Date of manufacture: A1006

Reference Document	Test Sequence	Test Requirement Description	Actual	Pass/Fail
508358	Note 1.a	Verify voltage output is greater than 7.0 volts across pins A & B.	7.34 VDC	Pass
508358	Note 1.b	Verify open circuit across pins B & C.	Open	Pass
508358	Note 1.c	Verify open circuit across pins B & D	Open	Pass
508358	Note 4	Module Trigger time when subjected to a 14.54g/43ms sawtooth pulse. Trigger timing is 37 +/- 2 ms.	38.3 ms	Pass
508358	Note 5	Module Trigger time when subjected to a 17.5g/35 ms sawtooth pulse. Trigger timing is 29 +/-2 ms.	29.8 ms	Pass

5.2 MODULE TRIGGER TIME TEST

5.2.1 Objectives and Description

The purpose of this test is to ensure the system has been manufactured in accordance to the production drawings and will send a signal to the system when subjected to a crash pulse. The proper firing time is verified by connecting the unit to an electro-dynamic thruster which can produce a crash pulse as specified per the production drawing 508358 and Sensor Specification E508645. The data is captured through the control system and is displayed graphically and numerically to the user. The user can obtain the firing time by subtracting the difference between the thruster zero time and the unit trigger time. This data is entered into a protected spread sheet for acceptance of the unit.

5.2.2 Test 5.2 Conclusions

Analysis of the test units showed no anomalies and functioned as designed. The proper trigger time was obtained per the production drawings by subtracting the trigger time from the thruster zero time. The proper voltage of 7.0 VDC or greater was obtained. See Figures 2 & 3. Results of the trigger time are recorded on AmSafe Form I-151. See Appendix B.

Figure 2 – 14.54g/43ms Sawtooth Shock Pulse

Blue = 31OCT06-10

Green = 15DEC06-79

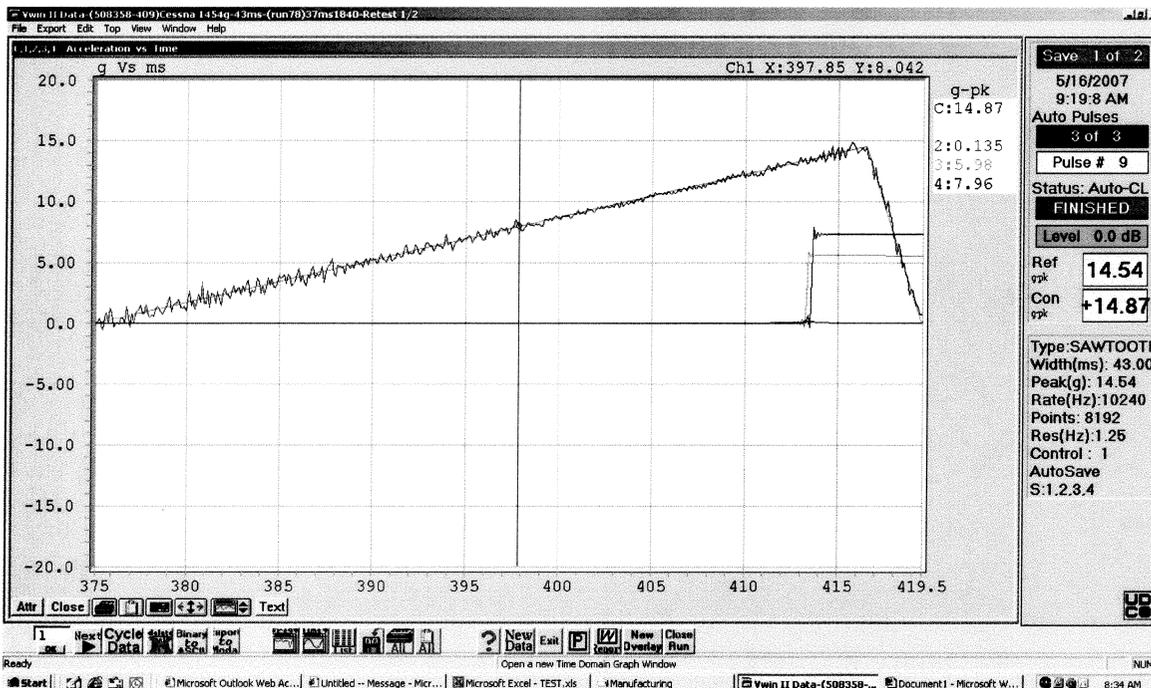


Figure 3 – 17.50g/35ms Sawtooth Shock Pulse

Blue = 31OCT06-10

Green = 15DEC06-79



