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CONCORDE®
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TECHNICAL BULLETIN

Subject: Section 1353 Compliance

October 29, 2015	Number: 4

Federal Airworthiness Regulations in Section 1353 of CFR Title 14 Parts 23, 25, 27 and 29 set forth the requirements for design and installation of a battery in type certified aircraft. Concorde demonstrates compliance with the requirements of Section 1353 by performing the following tests on our RG Series aircraft batteries.

1. To demonstrate that safe cell temperatures and pressures are maintained during any probable charging or discharging condition, the Induced Destructive Overcharge Test in RTCA/DO-293A, Paragraph 2.14 is conducted. In this test, the battery is intentionally driven into thermal runaway by charging the battery at 3.0 volts/cell and continuing to charge until the battery fails. The outcome of this test is that the battery assembly remains safe and does not release any flame, electrolyte, or debris.

2. To demonstrate that the battery fails safely when subjected to an external short circuit the Short Circuit Test of RTCA/DO-293A, Paragraph 2.7 is conducted. In this test, short circuit of 0.002 ohm is applied across the battery terminals. The battery must contain any debris and there must be no ignition of gases within the battery.

3. To demonstrate that no explosive or toxic gases are emitted the Battery Gas Emission Test of MIL-PRF-8565, Paragraph 4.5.18 is conducted. In this test, a fully charged battery is placed in a 15 cubic foot chamber, heated to 55°C, and charged at a voltage of 2.67 volts/cell for 1 hour. A sample of the gas is taken from the chamber at the end of the test period and must contain less than 3.5% hydrogen (the lower explosive limit of hydrogen in air is 4%). An alternate means of demonstrating compliance is to perform an analysis of the battery's hydrogen emission rate and the ventilation provisions of the aircraft installation. For this analysis, Concorde can supply an estimate of the hydrogen emission rate at various temperatures and charging voltage conditions. Assuring adequate ventilation in the battery compartment is the responsibility of the installer.

4. To demonstrate that no corrosive fluids or gases escape from the battery the Vibration Test and Operational Shock and Crash Safety Test of RTCA/DO-293A, Paragraphs 3.2 and 3.3 are conducted. When subjected to these tests, there can be no electrolyte leakage or spillage of electrolyte at any time or venting of gasses containing entrained electrolyte.

Results of these tests and complete test reports for specific battery models are available for TC and STC projects. Contact Customer Service for further information.