

Follow-up Action on Occurrence Report

ACCIDENT TO CHALLENGER CL600, N-90AG, AT BIRMINGHAM AIRPORT ON 4 JANUARY 2002
(AIRCRAFT CRASHED IMMEDIATELY AFTER TAKEOFF)

CAA FACTOR NUMBER : F39/2004
FACTOR PUBLICATION DATE : 20 August 2004
OPERATOR : Epps Air Service Inc
CAA OCCURRENCE NUMBER : 2002/00014
AAIB REPORT : AAR 5/2004

SYNOPSIS

(From AAIB Report)

Immediately after takeoff from Runway 15 at Birmingham International Airport the aircraft began a rapid left roll, which continued despite the prompt application of full opposite aileron and rudder. The left winglet contacted the runway shoulder, the outboard part of the left wing detached and the aircraft struck the ground inverted, structurally separating the forward fuselage. Fuel released from ruptured tanks ignited and the wreckage slid to a halt on fire; the Airport Fire Service was in attendance less than 1 minute later. The accident was not survivable.

Numerous possible causes for the uncontrolled roll were identified but all except one were eliminated. It was concluded that the roll had resulted from the left wing stalling at an abnormally low angle of attack due to flow disturbance resulting from frost contamination of the wing. A relatively small degree of wing surface roughness had a major adverse effect on the wing stall characteristics and the stall protection system was ineffective in this situation. Possible asymmetric de-icing by the Auxiliary Power Unit (APU) exhaust gas during pre-flight preparations may have worsened the wing-drop tendency.

N90AG's pilots should have been aware of wing frost during pre-flight preparations but the aircraft was not de-iced and the ice detector system would not have alerted them. It was considered that the judgement and concentration of both pilots may have been impaired by the combined effects of a non-prescription drug, jet-lag and fatigue.

Possible contributory factors were; the inadequate warnings on the drug packaging, Federal Aviation Administration (FAA) guidance material suggesting that polished wing frost was acceptable and melting of the frost on the right wing by the APU exhaust gas.

The investigation identified the following causal factors:

1. The crew did not ensure that N90AG's wings were clear of frost prior to takeoff.
2. Reduction of the wing stall angle of attack, due to the surface roughness associated with frost contamination, to below that at which the stall protection system was effective.
3. Possible impairment of crew performance by the combined effects of a non-prescription drug, jet-lag and fatigue.

Seven safety recommendations have been made.

FOLLOW UP ACTION

The seven Safety Recommendations, made by the AAIB following their investigation, are reproduced below, together with the CAA's responses.

Recommendation 2003-54

It is recommended that the US Federal Aviation Administration, and all Authorities who follow FAA practice, delete all reference to 'Polished Frost' within their regulations and ensure that the term is expunged from Operations Manuals.

CAA Response

This Recommendation is not addressed to the CAA.

CAA Status - Closed

Recommendation 2003-55

It is recommended that Bombardier Aerospace include the following specific limitation within appropriate aircraft manuals: 'Wings and tail surfaces must be completely clear of snow, ice and frost prior to takeoff.'

CAA Response

This Recommendation is not addressed to the CAA.

CAA Status - Closed

Recommendation 2003-56

It is recommended that the Civil Aviation Authority require the following specific statement within the limitations section of the flight manuals of aircraft with a significant susceptibility to ice contamination, 'Wings and tail surfaces must be completely clear of snow, ice and frost prior to takeoff', and communicate this Recommendation to other civil airworthiness authorities responsible for the primary type certification of new aircraft types.

CAA Response

Since 28 September 2003, responsibility for the matters addressed in this Recommendation has passed to EASA under Regulation (EC) 1592/2002 and the Recommendation should be addressed to that Agency.

CAA has, therefore, forwarded this Recommendation to EASA.

CAA Status - Closed

Recommendation 2003-57

It is recommended that the Federal Aviation Administration act upon the National Transportation Safety Board Recommendations A-00-4, A-00-5 and A-00-6 and, in particular review the guidance given to flight crew about the dangers of using non-prescription medication.

CAA Response

This Recommendation is not addressed to the CAA.

CAA Status - Closed

Recommendation 2003-58

It is recommended that the Federal Aviation Administration take measures to encourage action by the US Food and Drug Administration in line with the National Transportation Safety Board Recommendation, I-00-5, to ensure that over-the-counter medication contains appropriate warnings on any associated potential dangers in operating aircraft.

CAA Response

This Recommendation is not addressed to the CAA.

CAA Status - Closed

Recommendation 2003-59

It is recommended that Bombardier Aerospace reassess the fault tolerance of the stall protection system for the Challenger 604 and other aircraft models with a similar system and the measures aimed at verifying its integrity in service.

CAA Response

This Recommendation is not addressed to the CAA.

CAA Status - Closed

Recommendation 2003-60

It is recommended that the Federal Aviation Administration and Joint Airworthiness Authority review the current procedural approach to the pre takeoff detection and elimination of airframe ice contamination and consider requiring a system that would directly monitor aircraft aerodynamic surfaces for ice contamination and warn the crew of a potentially hazardous condition.

CAA Response

This Recommendation is not addressed to the CAA.

Since 28 September 2003, responsibility for setting design standards for most of the aircraft manufactured and operated within the European Union has passed to the European Aviation Safety Agency (EASA). Whilst the procedural aspects of pre take-off ice detection are appropriately addressed to the Joint Aviation Authorities, the introduction of a requirement for a system that would directly monitor aircraft aerodynamic surfaces for ice contamination is a matter for EASA to consider. CAA has therefore forwarded this Recommendation to EASA.

CAA Status - Closed