
Windshield failure in flight, Airbus A320-212, G-DACR, 28 April 1996

Micro-summary: The captain's windshield on this Airbus A320 cracked while in cruise.

Event Date: 1996-04-28 at 1345 UTC

Investigative Body: Aircraft Accident Investigation Board (AAIB), United Kingdom

Investigative Body's Web Site: <http://www.aaib.dft.gov/uk/>

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Airbus A320-212, G-DACR, 28 April 1996

AAIB Bulletin No: 8/96 Ref: EW/C96/4/12 Category: 1.1

Aircraft Type and Registration: Airbus A320-212, G-DACR

No & Type of Engines: 2 CFM56-5A3 turbofan engines

Year of Manufacture: 1992

Date & Time (UTC): 28 April 1996 at 1345 hrs

Location: West abeam Chateaudun VOR, France

Type of Flight: Public Transport

Persons on Board: Crew - 7 Passengers - 180

Injuries: Crew - None Passengers - None

Nature of Damage: Commander's windscreen cracked

Commander's Licence: Airline Transport Pilot's Licence

Commander's Age: N/K

Commander's Flying Experience: 10,425 hours (of which 167 were on type)

Last 90 days - 98 hours

Last 28 days - 39 hours

Information Source: AAIB Field Investigation

The aircraft was operating a flight from Birmingham to Malaga. Whilst in cruise flight in clear smooth air at Flight Level (FL) 330, Mach 0.78, the Commander's windscreen cracked, with multiple cracks around three sides. At about the same time, the ECAM amber warning 'ANTI-ICE L WINDSHIELD' appeared. The cabin pressurisation system remained normal throughout. The commander could not be certain which layers of laminate were cracked so he initiated a PAN call to ATC, advised them of the problem and requested a slow descent to FL100, which was carried out.

The aircraft had sufficient fuel onboard to enable a diversion to London Gatwick Airport, where the aircraft landed uneventfully at 1441 hrs. The weather conditions remained good throughout with no icing conditions encountered.

The manufacturer's Flight Crew Operating Manual (FCOM) contained an "Abnormal & Emergency" Procedure for such an event. This indicated that in the event of a cracked window,"the

maximum Flight Level is restricted to FL230 to obtain 5 psi differential without excessive cabin altitude and resultant EXCESS CABIN ALT warning". This section of the FCOM was not consulted by the crew for the descent.

Examination of the windscreen

Examination of the windscreen revealed that foreign object damage (FOD) was present on the rear lower edge on the outer surface of the outer glass pane (figure 1) and had occurred prior to the incident flight. There was no evidence that the FOD had caused overheating or arcing in the underlying electrical junction between the windscreen heating conductor film and the bus bar. Cracks in the outer glass pane had progressed from the FOD both forward and rearward along the bottom edge of the windscreen. The crack that ran forward from the FOD exhibited extensive crazing, overheating and arc damage. This damage was most severe in the area that was adjacent to the FOD and was a result of the crack causing delamination and local disturbance in the electrical continuity between the busbar and the conducting film. Where the rearward running crack ran close to the overheating discolouration in the bottom right-hand corner of the windscreen, crazing due to electrical arcing had also occurred. From the ends of both the forward and rearward running cracks numerous cracks fanned out and ran almost right around the outer pane of the windscreen.

Two areas of discolouration damage to the windscreen were noted when the aircraft was received by the operator in February 1996 (figure 1) but the examination concluded that these damaged areas did not contribute to the damage investigated.

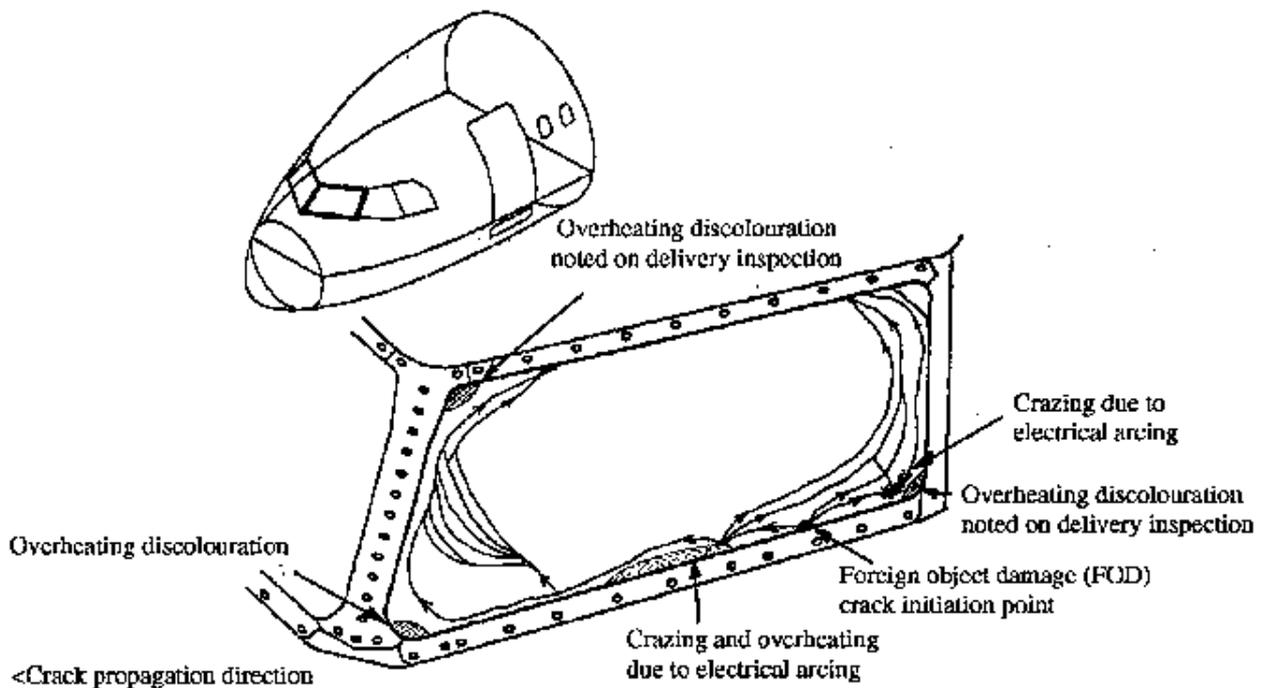


Figure 1 Damage to the windscreen

Adapted from an Airbus Industries drawing