

Avro 146-RJ100, G-BXAS, 4 January 2002 at 0920 hrs

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INCIDENT

Aircraft Type and Registration:	Avro 146-RJ100, G-BXAS	
No & Type of Engines:	4 Lycoming LF-507-1F turbofan engines	
Year of Manufacture:	1997	
Date & Time (UTC):	4 January 2002 at 0920 hrs	
Location:	3m east of Gatwick	
Type of Flight:	Public Transport	
Persons on Board:	Crew - 6	Passengers - 85
Injuries:	Crew - None	Passengers - None
Nature of Damage:	None	
Commander's Licence:	Airline Transport Pilots Licence	
Commander's Age:	35 years	
Commander's Flying Experience:	2,380 hours (of which 1,550 were on type)	
	Last 90 days - 110 hours	
	Last 28 days - 18 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and further information from the operator	

G-BXAS had been de-iced before the crew arrived at the aircraft to operate a scheduled flight from London Gatwick to Amsterdam. In accordance with the operator's standard procedures at that time, the pilots configured the aircraft for taxiing and take-off using APU bleed air for cabin air conditioning.

During the take-off, the pilots noticed a strong smell, similar but not identical to de-icing fluid. As the smell became stronger, the commander decided to change the conditioning air supply from APU to engines slightly earlier than the usual 'flaps zero' point. At the same time, he noticed smoke at the base of the left-hand 'A' windscreen panel and so a MAYDAY was declared and the pilots donned their oxygen masks.

The smoke dispersed quickly and before the pilots had completed the '*Smoke or Fire on Flight Deck*' check list items. Radar vectors for a return to land at London Gatwick were requested and ATC were informed that the smoke was dispersing. The cabin crew and passengers were briefed for the return and ATC were informed that there would not be an emergency evacuation unless fire or smoke were seen.

The landing was normal and ATC confirmed that there was no external fire or smoke visible. The crew taxied clear of the runway and, after establishing contact with the fire crew, taxied to the stand where the passengers disembarked normally.

Examination of the aircraft showed that the APU intake and the surrounding area were flooded with de-icing fluid and that this fluid had entered the air conditioning system. The APU was run for some 40 minutes on the ground. During this period the smell dissipated entirely and there was no further evidence of smoke.

The relief aircraft used by the operator later that morning for this service was G-BXAR, a similar Avro 146-RJ100. This aircraft was also de-iced shortly before take-off and it too suffered smoke and fumes on the flight deck shortly after becoming airborne. Its pilots also donned oxygen masks and returned to Gatwick. Examination showed that this aircraft also had de-icing fluid around the APU intake and exhaust.

The elapsed time between aircraft de-icing and take-off suggests that in both cases, de-icing fluid was carried towards the APU intake by the airflow generated along the fuselage during the take-off run.

Following these events, the operator reviewed its procedures and training, and made changes. The main changes were:

1. A change in operating procedure so that APU air is not normally selected for take-off following de-icing of the aircraft.
2. Some retraining of the operator's de-icing staff.
3. Incorporation of the aircraft manufacturer's Service Bulletin (SB 53-163-50299A) into the operator's 146/RJ fleet. This modification diverts fluid away from the APU intake.