

No: 10/90

Ref: EW/G90/06/19

Category: 2b

Aircraft Type and Registration: Aerospatiale AS355F1, G-BPRJ

No & Type of Engines: 2 Allison 250-C20B turboshaft engines

Year of Manufacture: 1983

Date and Time (UTC): 15 June 1990 at 0836 hrs

Location: Bristol Airport, Avon

Type of flight: Public Transport

Persons on Board: Crew - 1 Passengers - None

Injuries: Crew - None Passengers - N/A

Nature of Damage: Right engine cowling door destroyed, two rotor blades damaged.

Commander's Licence: Airline Transport Pilot's Licence (Helicopters)

Commander's Age: 46 years

Commander's Total Flying Experience: 6,220 hours rotary wing (of which 43 were on type)

Information Source: Aircraft Accident Report Form submitted by the pilot

Less than two minutes after take off from Bristol Lulsgate, the aircraft was called by ATC and the pilot informed that one of the cowlings on his aircraft had been reported open. The pilot reduced power and slowly raised the nose to bring back the speed before beginning a turn to the right to return to the airfield. As the turn was started, a slight lateral vibration was felt and the pilot realised that an engine or gearbox cowling had struck the main rotor. A safe landing was made on the south side of runway 27, less than a minute later.

The right engine cowling was attached at the hinge only, and the lower half was missing. A piece of cowling was lying separately on the ground, adjacent to the aircraft, and was found to have the rear latch attached to it, still in its locked position. After checking for further damage, the pilot made the short flight back across the airfield to the company's facilities with no further problems being encountered, but with the slight vibration still being present.

The pilot reported that he had positively latched the cowlings, and that this had been confirmed by a company mechanic who had observed his preparations.

AS 355 helicopters were subject to a CAA AD No 005-03-90, which implements a modification to the transmission and engine cowlings to provide a two point (fore and aft) restraint, to prevent them

contacting the main rotors should they open in flight. The AD was dated 2/4/90 and implementation was required within 2 months of that date. However the materials required for implementation of the modification were not available from the suppliers in time. For this reason the aircraft in question had been granted an exemption by the CAA on 13/6/90 and the modification had not been implemented at the time of the accident.

The materials required to implement the AD are still in short supply from the manufacturer and the pilot suggested that their production should be expedited in the light of this incident.

Location:	Buxton, Derbyshire
Type of flight:	Commercial
Persons on board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Slight damage to main rotor blade and to tubular member in tail-boom
Commander's License:	Airline Transport Pilot's License
Commander's Age:	42 years
Commander's Total Flying Experience:	2,450 hours rotary wing (of which 3,000 were on type) 120 hours fixed wing
Information Source:	Aircraft Accident Report Form submitted by the pilot and telephone conversation with company carrying out initial repairs

The aircraft was engaged on spraying operations. The pilot reported that after a run at 20 ft A.G.L. he began a climb during which he became aware of a loss of rotor rpm with an associated loss of performance. No satisfactory landing site was immediately available, so the aircraft was manoeuvred towards a more distant area for a run-on landing. A further loss of performance occurred during this manoeuvre and the left-hand spray boom struck a small tree. The pilot was nevertheless able to make a semi-controlled landing. After doing so he judged that no damage had occurred to the aircraft other than to the spraying equipment; the engine was running normally with no unusual instrument indications and no excessive vibration was present. At this stage the pilot considered the position of the aircraft to be unsuitable to carry out a shutdown, so he flew a short distance to a more suitable site and landed again.

On examination, minor damage to a main rotor blade was noted together with damage to a tubular member of the tail boom.

A detailed examination of the engine revealed no single problem which could account for a major loss of power. It was noted, however, that the hot-air valve was not moving correctly to the 'cold' position and the transition piece part of the induction system ducting in the area of the turbo-charger, appeared to have an incorrectly fitted seal which may have been allowing some air leakage. In addition, some slight adjustment was made to the setting of the density controller, after which it was judged by the company carrying out the work that an improvement of power output had been achieved.