

No: 1/91

Ref: EW/G90/10/09

Category: 1c

**Aircraft Type and Registration:** Piper PA-24-260, G-ATNV

**No & Type of Engines:** 1 Lycoming IO-540-D4A5 piston engine

**Year of Manufacture:** 1966

**Date and Time (UTC):** 17 October 1990 at 1010 hrs

**Location:** 12 nm from Biggin Hill Airport, Kent

**Type of flight:** Private

**Persons on Board:** Crew - 1 Passengers - None

**Injuries:** Crew - None Passengers - N/A

**Nature of Damage:** Engine cowling and exhaust system

**Commander's Licence:** Private Pilot's Licence with IMC and Night ratings

**Commander's Age:** 44 years

**Commander's Total Flying Experience:** 484 hours (of which 182 were on type)

**Information Source:** Aircraft Accident Report Form submitted by the pilot, examination of aircraft by an AAIB engineer, analysis of Thames radar and ATC recordings together with information supplied from the Biggin Hill ATC log

Whilst on a flight from Andrewsfield to Biggin Hill, the pilot made contact with Thames Radar. He reported that he was at 2000 feet with 16 miles to run to Biggin and was squawking 4321. The Thames Radar operator responded, asking him to squawk 4560. Approximately 2 minutes later the pilot called Thames Radar again, reporting a problem with the engine cowling and requesting navigational assistance to the nearest suitable airfield. At this time G-ATNV was reported as being above cloud. The radar operator responded by stating that Biggin Hill was the nearest airfield and the aircraft now had 10 miles to run with Biggin in its 1 o'clock position. The flight continued with the controller providing vectors which enabled the pilot to position the aircraft overhead Biggin-Hill and gain visual contact. An initial approach was abandoned when the pilot failed to obtain the correct landing gear indications. After a go-around and second approach, the aircraft landed safely. The landing took place approximately 10 minutes after the first report of the problem.

Examination of the aircraft after landing revealed that the right-hand upper engine cowling was extensively damaged and was unlatched. Other local damage was observed. The pilot believed that

the damage resulted from collision with a solid object. He arranged for temporary repairs to be made and flew the aircraft back to Andrewsfield.

He subsequently contacted the London Air Traffic Control Centre at West Drayton who carried out radar tracing action, and reported that an unidentified radar contact appeared to merge with the primary return produced by his aircraft.

Subsequent analysis by AAIB using the radar recording, the Thames Radar Air Traffic Control voice recording and information from the Air Traffic Control log at Biggin Hill, showed that the merging of the unidentified contact with the aircraft return occurred some minutes after the pilot of G-ATNV reported his problem, and that the aircraft with which the merging occurred was not G-ATNV, but another aircraft which landed at Biggin shortly after G-ATNV. The voice recording does not indicate that the crew of this other aircraft experienced any problems.

Examination of the damaged cowling was carried out by AAIB after the temporary repairs had been carried out and the aircraft had flown back to Andrewsfield. Damage appeared to be restricted to the upper right-hand cowling, the lower right hand cowling in the vicinity of the rear latch, and part of the engine exhaust system (see photograph).

There was no evidence of any object having struck the propeller or the forward facing part of the cowling. The damaged cowling area bore no visible evidence of bird debris and examination under ultra violet light produced none of the characteristic evidence normally associated with bird impacts.

Of the three right hand cowling latches, the forward two were complete, whilst the rearmost one was not. Its cam-lock fastener, the articulated lower latch section and the pivot/clevis-pin, were all missing (see diagram). One of the two lugs of the upper latch section which carry the lower latch pivot pin was found to be bent, whilst the other was undamaged. The cowling had suffered failure of the lower edge member and extensive tearing of the panel between the rear and middle latches. Most of the markings evident on the cowling were consistent with the effects of damage inflicted by the rear portion curling in the airflow after tearing had occurred, allowing its edge to repeatedly strike the painted surface.

Small holes noted in the lower cowling in the area of the rear latch were consistent with repeated strikes by the rear cam-lock fastener occurring with all 3 latches released and the profile of the cowling deformed. Damage to the exhaust system appeared to be the result of excessive movement of the remainder of the cowling panels after the upper right cowling became unlatched.

The lower articulated section of the cowling latch, which carries the cam-lock fastener, is attached to the upper section by means of an elongated clevis-pin secured by a very small split-pin. The split-pin cannot readily be seen when the cowling is fastened.



SCHEMATIC VIEW OF COWLING LATCH

