

DH82A Tiger Moth, G-ANHK

AAIB Bulletin No: 11/2003	Ref: EW/G2003/04/12	Category: 1.3
Aircraft Type and Registration:	DH82A Tiger Moth, G-ANHK	
No & Type of Engines:	1 De Havilland Gipsy Major 1 piston engine	
Year of Manufacture:	1939	
Date & Time (UTC):	17 April 2003 at 1115 hrs	
Location:	Bromsgrove Farm, Pewsey, Wiltshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Propeller, engine cowling, cockpit floor and left wing tips	
Commander's Licence:	Private Pilot's License	
Commander's Age:	55 years	
Commander's Flying Experience:	1,078 hours (of which 263 were on type)	
	Last 90 days - 6 hours	
	Last 28 days - 1 hour	
Information Source:	Aircraft Accident Report Form submitted by the pilot, telephone enquiries by the AAIB and metallurgical examination of failed component	

Whilst cruising at approximately 2,000 feet the pilot noticed a slight engine vibration which, within a few seconds, worsened and the engine lost power. A backfire was heard and the pilot saw smoke coming from the carburettor air intake. The vibration increased when the throttle was opened. The pilot checked both the magnetos and fuel supply, with no anomalies noted, before conducting a forced landing into wind. During the landing roll, however, the aircraft tipped onto its nose coming to rest on the propeller and left wing tip. The pilot, who was uninjured, was able to climb out of the open cockpit. There was no fire.

Examination of the engine by a maintenance organisation revealed that the No 2 cylinder inlet rocker arm had failed close to the exhaust valve, with the separated portion having become jammed in the exhaust guide. The broken pieces of the rocker arm, which were returned to the AAIB for metallurgical examination, revealed a high cycle fatigue failure (see Figure 1), which had initiated in a region of mechanical damage (see Figure 2).

Figures 1 and 2

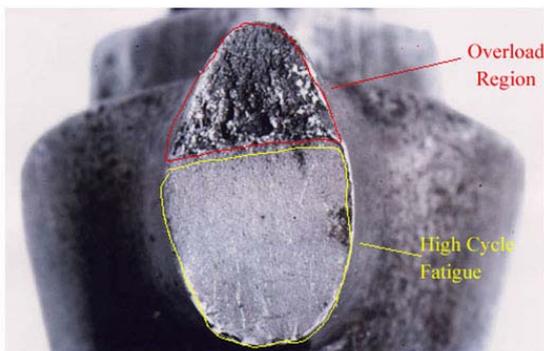


Figure 1

Fracture surface indicating high cycle fatigue failure



Figure 2

Plane of separation of Rocker Arm coincident with area of mechanical damage



Photographs courtesy HT Consultants

The aircraft, fitted with this engine, had been operated by the current owner for some 30 years with low utilisation. The engine had completed 670 hours since overhaul, but only 170 hours since 1978. The last entry in the log book for maintenance, which would have entailed removal of the cylinders and thus the rocker arm, was in 1990. It was not possible to determine when or how the damage to the rocker arm occurred.