

<b>Aircraft Type and Registration:</b>	DH82A Tiger Moth, G-ALIW	
<b>No &amp; Type of Engines:</b>	1 De Havilland Gipsy Major I piston engine	
<b>Year of Manufacture:</b>	1938	
<b>Date &amp; Time (UTC):</b>	15 February 2005 at 1330 hrs	
<b>Location:</b>	Private Strip at Littlebredy, Dorchester, Dorset	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 2	Passengers - None
<b>Injuries:</b>	Crew - None	Passengers - None
<b>Nature of Damage:</b>	Damage to propeller, underside of lower wing and detached undercarriage strut on right side	
<b>Commander's Licence:</b>	Airline Transport Pilot's Licence with Instructor Rating	
<b>Commander's Age:</b>	68 years	
<b>Commander's Flying Experience:</b>	8,186 hours (of which 568 were on type) Last 90 days - 72 hours Last 28 days - 24 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot	

The purpose of the flight was for an instructor to revalidate the pilot's Private Pilot's Licence. The intention was to practice circuits followed by upper air work and a short cross-country with a practice forced-landing. After the instructor had demonstrated a 'three-point' landing, the pilot performed a 'wheeler' landing, intending to allow the tail to settle before applying power to go around. However, before the tailskid touched, the right undercarriage collapsed and the aircraft tipped onto its nose and right wingtip before settling back in an upright attitude. The instructor reported that the touchdown was normal and states that the damage was relatively light due to the low groundspeed at the time of the collapse. Both pilots evacuated the aircraft normally.

The instructor, who is a retired metallurgist, found that the right undercarriage drag strut had detached from the fitting securing it to the fuselage due to failure of the swivel bolt, part number H.22186 (see Figure 1). On a brief visual examination, he diagnosed that the fracture involved a fatigue crack. One half of the fracture was sent to the AAIB for examination: this concurred with his diagnosis with the additional observation that it appeared to be low-cycle fatigue occurring over a

relatively short period and that the bolt passing through the strut fork fitting and the swivel bolt appeared to have been excessively tightened at some point. The history of the failed item is unknown but a report was found, dated 1960, in which a De Havilland investigation identified an almost identical failure. The report did not recommend any action as "this is the first recorded defect of this particular nature".

The maintainer of the aircraft has advised that he intends to inspect the swivel bolts during annual inspection of Tiger Moth aircraft in future and it would seem prudent for other maintainers to do likewise. The age and history of these components is scarcely ever recorded and loads experienced can vary greatly with runway conditions and also the effectiveness of lubrication, since the bolt must be free to articulate in the fitting as the undercarriage struts 'spread' under load.

Figure 1



Tiger Moth Main Undercarriage drag strut showing location of failed pin and approximate line of fracture.