

**Aircraft type and registration:** HS125-700B F-GASL (light twin jet aircraft)

**Year of Manufacture:**

**Date and time (GMT):** 23 June 1983 at 1715 hrs

**Location:** Hatfield Aerodrome

**Type of flight:** Positioning

**Persons on board:** Crew - 1                      Passengers - 1

**Injuries:** Crew - Nil                      Passengers - Nil

**Nature of damage:** Damage to starboard wing tip, flap and flap hinges, gear door, gear operating jack and rear spar web above gear bay

**Commander's Licence:** French Commercial Pilot's Licence

**Commander's Age:** 57 years

**Commander's total flying experience:** 14,700 hours (of which 4,900 were on type)

When the undercarriage was lowered as the aircraft made an approach to Hatfield, only two 'green' indications were presented, that for the right main undercarriage remaining at 'red'. Despite re-cycling several times and use of the emergency lowering handpump, this red indication persisted. After a low flypast of the control tower, the pilot was advised that all three undercarriage legs were down and seemed to be correctly positioned. A decision was made to land with the undercarriage selected down.

Soon after touchdown, the right main undercarriage collapsed allowing the right wing tip, flap and flap hinges to contact the ground. The aircraft slewed to the right and came to rest without further major damage after a ground slide of some 800 metres.

Subsequent examination of the right main undercarriage revealed that the retraction jack body attachment lugs had failed in tension, which in turn had allowed the jack to punch a small hole in the wing rear spar web above the undercarriage bay. Manual operation of this undercarriage revealed a general stiffness in the sidestay locking mechanism sufficient to inhibit its natural locking action as the sidestay was straightened. This action is not mechanically positive as it relies upon a small spring strut within this mechanism to position a roller around an appropriately shaped cam on the sidestay lower arm, before a mechanical lock of the sidestay is achieved. Dimensional checks of the component parts of the sidestay did not reveal any evidence of distortion or other abnormalities. However, on both main undercarriage sidestays the required clearance between each roller and cam was not present, a condition that can lead to higher than desired loads being generated during undercarriage retraction/extension.

It was established that three days prior to the accident, at the aircraft's maintenance base in Paris, the aircraft had been subjected to a 600 hr check during which the main and nose undercarriage bays had been de-greased and washed with a high pressure spray. Although fresh grease was evident around the grease nipples of the gear main pivots, no apparent traces of oil or grease were detected around the sidestay locking mechanism or associated linkages.

It is a requirement of the HS125-700B maintenance manual that oil or grease (as appropriate) is applied by hand every 150 flying hours to all pivots and joints within these mechanisms.

Following repairs to the aircraft, the left hand undercarriage jack attachment lugs failed during a retraction test. Both jacks were subsequently examined in detail, which showed areas of stress corrosion in each had been exploited leading to tension overload failures of the lugs.

A manufacturer's service bulletin, No 32A197 and dated 29/8/83, has been issued requesting operators to inspect the area on the undercarriage retraction jacks.

No: 12/83

Ref: EW/C837

<b>Aircraft type and registration:</b>	D H 82A Tiger Moth (light single engine biplane). G--AXBW	
<b>Year of Manufacture:</b>	1940	
<b>Date and time (GMT):</b>	2 July 1983 1736 hrs	
<b>Location:</b>	Leys Farm near Cranfield, Bedfordshire	
<b>Type of flight:</b>	Private	
<b>Persons on board:</b>	Crew — 2	Passengers — Nil
<b>Injuries:</b>	Crew — 1 Fatal 1 Serious	Passengers — N/A
<b>Nature of damage:</b>	The aircraft was destroyed forward of the rear cockpit	
<b>Owner and Commander:</b>		
<b>Licence:</b>	Private Pilot's Licence	
<b>Age:</b>	54 years	
<b>Total flying experience:</b>	402 hours (of which 156 were on type)	
<b>Co-pilot:</b>		
<b>Licence:</b>	Airline Transport Pilot's Licence	
<b>Age:</b>	49 years	
<b>Total flying experience:</b>	14600 hours (of which 6 hours were on type)	

The rear cockpit of the Tiger Moth was occupied by the owner, a PPL holder, while the front cockpit was occupied by a professional pilot who was himself the owner of a light aircraft. The intention of the flight was that the co-pilot should take some air-to-air photographs of three Aeronca Sedan aircraft flying in formation to the southwest of Cranfield.

The Tiger Moth took off from Cranfield at 1732 hrs piloted by the owner and closely followed by three Aeroncas. After climb power had been selected, the co-pilot requested control of the aircraft and then started a level left hand turn at about 800 ft above aerodrome level. The pilot of the leading Aeronca Sedan reports that the Tiger Moth flicked into a left hand spin from which it did not recover before hitting the ground in a cornfield. There was no fire although fuel spilled from the ruptured fuel tank. The co-pilot was killed instantly and the pilot received serious injuries. It was noted that the transverse wire, to which the pilot's shoulder harness had been attached, had failed.

The pathological examination revealed no evidence of any pre-existing medical condition that might account for the accident. The aircraft wreckage was examined but there was no evidence of failure that might have led to the loss of control.

However, the attention of the Airworthiness Division of the CAA was drawn to the degree of corrosion on the airframe, in particular, the wing attachment bolts, as the aircraft had recently passed an inspection for the issue of the Certificate of Airworthiness.