

No: 7/90

Ref: EW/G90/05/03

Category: 1c

Aircraft Type and Registration: Beech D17S 'Staggerwing', N18028

No & Type of Engines: 1 Pratt and Whitney R985 radial piston engine

Year of Manufacture: 1937

Date and Time (UTC): 1 May 1990 at 0812 hrs

Location: Exeter Airport, Devon

Type of Flight: Private

Persons on Board: Crew - 1 Passengers - 3

Injuries: Crew - None Passengers - None

Nature of Damage: Damage to propeller, landing gear doors, landing gear retraction mechanism and left-hand flap.

Commander's Licence: Private Pilot's Licence (UK and USA) with Instrument, IMC and Night ratings

Commander's Age: 53 years

Commander's Total Flying Experience: 2,372 hours (of which at least 38 were on type)

Information Source: Aircraft Accident Report Form submitted by the pilot

The aircraft was being flown from Cardiff to Exeter. The pilot states that the take-off from Cardiff was normal, with the landing gear seeming to retract at the usual rate, illuminating the red 'gear up' light on the instrument panel. Climb and cruise performance also indicated that the landing gear had retracted fully. This was confirmed by the passengers on board, some of whom were licenced pilots.

At Exeter the pilot joined the circuit from overhead the airport and on the downwind leg he pulled out the landing gear lever for extension; the pilot noted that the green 'gear down' light was illuminated, completed his downwind checks and selected half flap. On base leg he selected full flap and trimmed the aircraft for the approach at 90/95 mph indicated airspeed.

The pilot reports that the landing was made in a 3-point attitude and seemed normal until the right wing appeared to lift: it rapidly became evident that, in fact, the left-hand landing gear was collapsing. The pilot turned off the magnetos and master switch and the aircraft came to rest on the two partially retracted main landing gear legs.

The Beechcraft D17 'Staggerwing' was one of the earliest aircraft to be designed with an electrical landing gear retraction system. The design is basically a chain-and-sprocket mechanism, driven by a single electric motor (with manual back-up) and controlled by a single 'up' limit switch for gear retraction and a single 'down' limit switch for gear extension. Engineering examination of the landing gear system on N18028 showed that the single 'down' limit switch, which also controls the green 'gear down' light, was stuck in the 'gear down' position: when tested later it was found to stick on about 20% of occasions.

The pilot commented later on the limitations, from a modern viewpoint, of a landing gear system in which the same pair of limit switches which control the electric motor also act as the proximity switches for the single gear-position lights on the instrument panel.