

Piper PA-18-150, G-WLAC

AAIB Bulletin No: Ref: EW/G2000/12/12 **Category:** 1.3

Aircraft Type and Registration: Piper PA-18-150, G-WLAC
No & Type of Engines: 1 Lycoming O-320-A2B piston engine.
Year of Manufacture: 1970
Date & Time (UTC): 31 December 2000 at 1510 hrs
Location: White Waltham Airfield, Berkshire
Type of Flight: Private (Training)
Persons on Board: Crew - 2 - Passengers - None
Injuries: Crew - None - Passengers - N/A
Nature of Damage: Fuselage twisted, tailwheel damaged beyond repair
Commander's Licence: Airline Transport Pilot's Licence, with Instructor Rating.
Commander's Age: 27 years
Commander's Flying Experience: 1,180 hours (of which 32 were on type)
Last 90 days - 77 hours
Last 28 days - 20 hours
Information Source: Aircraft Accident Report Form submitted by the pilot

The aircraft was being flown on a circuit training sortie to practise crosswind approaches and landings to grass Runway 11 at White Waltham, Berkshire. A left hand, oval circuit pattern was flown, and the handling pilot, who was the pilot under instruction, was using the "wing down" or side-slip technique to counter the crosswind. The surface wind was approximately 160°/11 kt.

Three successful approaches had been flown. On the fourth approach the pilot established a right wing low approach using right aileron and left rudder from approximately 300 feet agl. The touchdown was uneventful and the pilot selected the flap up, the carburettor heat to cold and smoothly applied full power to complete the 'touch and go' landing. At rotation speed the pilot selected the climb attitude and the aircraft began to climb away at 75 mph. At about 30 feet agl, and without warning, the engine suddenly failed. The instructor took control and landed the aircraft straight ahead, but there was insufficient runway remaining in which to bring the aircraft to a halt and the instructor judged that the aircraft would impact the perimeter hedge. He therefore deliberately induced a ground loop to the right and the aircraft came to a halt to the south of the runway having sustained damage to the fuselage and tailwheel. During the ground loop the engine restarted without input from the crew.

In his report the pilot states that carburettor icing might have caused the loss of engine power, but the sudden loss of power, the prior use of carburettor heat and the lack of any other symptoms of carburettor icing seem to make this possibility unlikely.

An investigation carried out by the flying club engineers found no fault with the engine. There was no evidence of water in the fuel system; the right tank was about three-quarters full. The fuel selector was correctly positioned to feed fuel from the right main tank and fuel flow checks were normal. There was no sign of oiling or sooting on the engine spark plugs. The electrical system was checked and found to be serviceable.

The PA-18-150 has a main fuel tank located in each wing. Fuel can be fed to the engine from either the left or the right main tank. In this incident fuel was being used from the right tank. A small header tank, containing approximately 2 US quarts of fuel, is located between the main fuel tank and the engine and is designed to maintain a constant fuel flow to the engine regardless of the aircraft's attitude. The header tank for the right wing tank is located aft of the rear seat and is orientated roughly along the aircraft's horizontal axis.

The flying club engineers were of the opinion that the engine might have been starved of fuel after prolonged side-slipping. Although the right tank was quite full, they considered that the normal fuel feed from the right tank might have been interrupted in a right-wing-down attitude and the engine feed would therefore have been dependent on fuel flow from the right header tank only. The repeated prolonged sideslip approaches would have used fuel from the header tank possibly to the point where, during the climb out on the final touch and go, the header tank fuel was exhausted before fuel flow from the right main tank could be re-established. During the ground loop to the right normal forces could have helped re-establish fuel flow to the engine.

The manufacturers checked their database of PA-18-150 accidents and could find no similar previous incident of fuel starvation. An airtest, carried out after the aircraft had been repaired, sought to replicate the loss of power symptoms after prolonged side-slips but without success.