

AAIB Bulletin No: 3/95

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Category: 1.3

Aircraft Type and Registration: Piper PA-28-161 Cherokee Warrior II, G-BODC

No & Type of Engines: 1 Lycoming O-320-D3G piston engine

Year of Manufacture: 1988

Date & Time (UTC): 7 December 1994 at 1345 hrs

Location: 1 nm north of Ludgershall, Buckinghamshire

Type of Flight: Private (Training)

Persons on Board: Crew - 1 Passengers - None

Injuries: Crew - None Passengers - N/A

Nature of Damage: Severe damage to propeller, underside of forward fuselage, nose and right main gear; slight damage to right wing and flap

Commander's Licence: Student Pilot

Commander's Age: 18 years

Commander's Flying Experience: 44 hours (of which 34 were on type)
Last 90 days - 31 hours
Last 28 days - 12 hours

Information Source: Aircraft Accident Report Form submitted by the pilot and accident report provided by the flying school

The student pilot was on a solo training flight which included practice engine fire drill. She closed the throttle at 3,000 feet altitude and entered a gliding descent at 100 kt with full flap selected, carrying out the drill from the checklist as a touch drill. Though she thought that she had selected carburettor heat to 'ON', afterwards she could not be certain. At 1,800 feet she stopped the exercise because she was approaching some power cables but when she opened the throttle the engine 'coughed' and did not respond. She switched on the electric pump and changed the fuel selection from the left tank to the right but the engine still did not respond. At this point the aircraft was at 1,000 feet and the presence of the power cables on her right restricted her choice of field for a forced landing. She turned to the left, away from the cables and towards the only suitable field apparent to her, although this committed her to a downwind approach and landing. She put out a radio call on her operating frequency, Oxford Approach, and landed some distance into the field. The aircraft came to a halt upright and, after carrying out shutdown actions and making further radio calls which were relayed to Oxford Approach, she exited the aircraft normally.

The aircraft landed in a field of winter wheat, the surface of which was wet and soft. Ground marks showed that the aircraft had landed with considerable left drift (right yaw) such that the nosewheel and right mainwheel were in line at impact. The nose leg and right main leg had collapsed and, in striking the underside of the right wing the main leg had distorted the underwing fuel drain allowing fuel to drain from the tank. Nevertheless, when the aircraft was first examined shortly after the accident there was an estimated 15 gallons found to be remaining in each tank. Damage to the propeller was consistent with it being unpowered or stopped. The carburettor heat control was found at an intermediate position but there was a possibility that it had moved in the impact.

In the subsequent detailed investigation of the aircraft, when a new propeller had been fitted and a temporary fuel supply provided, an attempt was made to run the engine and it started immediately and ran satisfactorily up to its maximum RPM.

The meteorological observations from RAF Benson at 1250 hrs and 1350 hrs on the day of the accident were that there were cumulonimbus clouds in the area but the general weather was good. Visibility was in excess of 10 km and there was no significant cloud below 4,000 feet. The observed temperature and dewpoint were +9°C and +2°C respectively. The wind was southerly at 15 kt. In its report, the flying school pointed out that with a nominal lapse rate of 2°C/1,000 feet it was likely that, at 3,000 feet, the ambient temperature was about +4°C and the chart published in AIC 133/1992 shows that at that condition with a dewpoint of +2°C there would be a serious risk of carburettor icing at any power. With full flaps as selected and throttle closed, the time taken to descend from 3,000 feet to 1,800 feet would have been only about 30 seconds but some ice may have been present before the throttle was closed and, if carburettor heat was only selected to an intermediate position, sufficient ice may well have formed to cause the power failure experienced.