

Piper L21B (Modified) Super Cub, G-BAFT

AAIB Bulletin No: 6/98 Ref: EW/G97/12/08 Category: 1.3

Aircraft Type and Registration: Piper L21B (Modified) Super Cub, G-BAFT

No & Type of Engines: 1 Lycoming O-320-A2B piston engine

Year of Manufacture: 1957

Date & Time (UTC): 13 December 1997 at 1600 hrs

Location: Sackville Lodge Farm, Bedfordshire

Type of Flight: Private

Persons on Board: Crew - 1 - Passengers - None

Injuries: Crew - None - Passengers - N/A

Nature of Damage: Damage to nose area, landing gear, wings, left wing struts, tail-fin and fuselage

Commander's Licence: Private Pilot's Licence

Commander's Age: 44 years

Commander's Flying Experience: 325 hours (of which 105 were on type)
Last 90 days - 2 hours
Last 28 days - 1 hour

Information Source: Aircraft Accident Report Form submitted by the pilot, telephone discussions with aircraft owner and with aircraft repair company, report submitted by local police

The aircraft carried out 3 aero-tows to 2,500 feet without incident. After releasing the last glider, the tug descended and rejoined the circuit. The pilot reported that whilst on base leg, the engine suddenly lost power. Carburettor heat had recently been applied and was re-applied, but to no avail. Thereafter the engine stopped windmilling and came to a halt with the propeller in the horizontal position. At this point the aircraft was at a height of 100 to 120 feet.

The pilot selected what appeared to be a suitable field for a forced landing, beyond a line of power cables. At this point he re-checked the fuel status and changed tanks before switching off the magnetos and fuel and tightening his harness. He unlatched the door and prepared to land over the

power lines into the upper half of the field, using full flap. As the aircraft reached 10 to 15 feet agl, it suddenly decelerated and fell to the ground, coming to rest inverted, following a very short ground run. The pilot escaped successfully through the hatch.

Subsequent examination revealed that the tow rope was tangled around all 3 overhead power cables. The rope had remained attached to the aircraft throughout the approach, since the pilot did not have time to release it; the weak link had failed before the aircraft came to a halt. Visitors to the scene confirmed that considerable fuel was present, since substantial quantities were leaking from the inverted aircraft after the accident. The location/distribution of fuel between tanks was, however, not recorded.

The aircraft was subsequently salvaged and examined in detail. A comprehensive examination of the fuel system revealed no evidence of any defect, failure or contamination. The engine was run in the airframe and found to perform satisfactorily throughout its operating range. Detailed examination of the ignition system, together with extensive endurance running of both magnetos on a test rig, did not reveal evidence of any defect that would account for the power loss. The aircraft has since been repaired and returned to service. It has been found to perform satisfactorily.

The owner of the aircraft reported that it was practice at the gliding club to carry out the majority of the descent, following an aero-tow, at a fairly high power setting, using an airspeed close to the maximum rough-air speed of the aircraft, thereby avoiding excessive shock-cooling of the engine cylinders. The recorded temperature at an airport some 25 miles south of the accident site was 6°C with a dew point of 5°C at about the time the accident was reported to the police. This equates to a relative humidity close to 100%.

Experience has shown that serious icing can occur on carburettor equipped piston engines operating at or below cruise power with this combination of temperature and humidity. Widely accepted graphical results of experiments carried out imply that the temperature/humidity combination recorded on this occasion placed the conditions at close to the point of maximum carburettor icing effect. Experience also shows, however, that the engine/carburettor combination installed in this aircraft is less susceptible to icing than certain other types of unit in this power category.