Piper PA-38-112, G-BKAR, 18 April 2000 at 1300 hrs

AAIB Bulletin No: 8/2000 Ref: EW/G2000/04/12 Category: 1.3

Aircraft Type and Registration:	Piper PA-38-112, G-BKAR
No & Type of Engines:	1 Lycoming O-235-L2C piston engine
Year of Manufacture:	1979
Date & Time (UTC):	18 April 2000 at 1300 hrs
Location:	East of Teesside Airport, County Durham
Type of Flight:	Private
Persons on Board:	Crew - 1 - Passengers - None
Injuries:	Crew - None - Passengers - N/A
Nature of Damage:	Damage to landing gear, propeller and wings
Commander's Licence:	Basic Commercial Pilot's Licence
Commander's Age:	67 years
Commander's Flying Experience:	15,340 hours (of which 4,000 were on type) Last 90 days - 140 hours Last 28 days - 51 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Previous forced landing

Two days prior to the accident, this aircraft had been forced to land in a field to the south east of Teesside Airport, where it was based, as a result of a loss of power from the engine. The forced landing was accomplished satisfactorily. A site examination of the aircraft by its maintenance engineer found evidence of contamination in the carburettor fuel bowl, which was considered to have probably resulted from a microbiological process. The fuel system was therefore cleaned and checked, with a fuel flow check to the carburettor and high power engine runs, which were completed satisfactorily.

Attempted recovery of the aircraft

In order to recover the aircraft, an adjacent field was chosen with a view to flying the aircraft out and back to Teesside Airport. The pilot reported that this field had been flat, with short damp grass, but opinions appeared to differ as to the 'firmness' of the surface. The pilot, however, considered

that the surface was hard, and the field length was paced-out by two instructors who estimated it to be some 360 metres in length. A section of a hedgerow between this field and a field beyond had been dismantled by the farmer. The intention was to align the take-off run diagonally across the field with this gap at the end so that an overrun area would be available into the next field, which contained only short crop.

Prior to the intended take off, all basic checks were reported to have been completed and the aircraft was then taxied to the far end of the field, where satisfactory power checks were carried out. Teesside ATC passed their current weather to the pilot which was dry and with good visibility, wind 190°/11 kt (giving a headwind component of approximately 9 kt), temperature +6°C, dew point +2°C and with scattered cloud at 2,500 feet. After checking that the take off run was clear, the pilot selected the first stage of flap and then applied full power against the brakes. After accelerating over a distance estimated by the pilot to have been some 250 metres, the aircraft became airborne at a speed of approximately 53 kt, but it then touched down and then became airborne again. At about this time the pilot reported becoming aware of a reduction in engine power and, because of insufficient remaining distance to land the aircraft in the take-off field, he attempted to land in the overrun field. However he found the aircraft difficult to control at the low airspeed. The left wing then dropped and struck a post, within the hedge at the left side of the cleared gap in the hedgerow, causing the aircraft to crash land in the field. The pilot was not injured in the accident. The maintenance engineer subsequently examined the carburettor again and it was reported that no further evidence of contamination was observed. However, the temperature and dew point values referred to above indicated the probability of carburettor icing as being 'high at any power'.

Take off distance assessment

The pilot handbook for this model of aircraft indicated that, at sea level, with an aircraft all up weight of 1,670 lbs, on a dry level paved surface, with a headwind component of 9 kt and ambient temperature of +6°C, using the first stage of flap and with full power applied before brakes release, a ground roll of some 177 metres should be expected before lift off is achieved at 53 kt. The handbook did not include corresponding distances for lighter aircraft weights, which would tend to reduce the take off ground roll. However, if the distance of 177 metres is multiplied by a factor of 1.3 for a hard level grass surface, as recommended in the CAA Safety Sense Leaflet No 7b, then the applicable ground roll distance increases to 230 metres. In addition, if the take off surface is 'soft', then a further factor of 1.25 should be applied, which would increase the ground roll distance to 288 metres. The equivalent distances to clear a 50 feet obstacle are approximately 480 metres and 540 metres. Furthermore, and as pointed out in this Safety Sense Leaflet, these factors should be treated as minimum values.