

No: 10/91

Ref: EW/G91/07/17

Category: 1c

**Aircraft Type and Registration:** Piper PA-28-180 Cherokee, G-AZSG

**No & Type of Engines:** 1 Lycoming O-360-A4A piston engine

**Year of Manufacture:** 1972

**Date & Time (UTC):** 11 July 1991 at 1405 hrs

**Location:** Netherthorpe airfield, Nottinghamshire

**Type of Flight:** Private

**Persons on Board:** Crew - 2 Passengers - 2

**Injuries:** Crew - None Passengers - None

**Nature of Damage:** Extensive, to fuselage, engine mount, cowling, propeller and undercarriage

**Commander's Licence:** Private Pilot's Licence

**Commander's Age:** 55 years

**Commander's Flying Experience:** 132 hours (of which 20 were on type)

**Information Source:** Aircraft Accident Report Form submitted by the pilot and subsequent enquiries by AAIB.

The pilot reported that all pre-take-off checks, including magneto and carburettor heat checks at high power, were carried out with no apparent abnormalities. Take-off was then attempted with 25 flap selected, from Runway 24 at Netherthorpe airfield. The aircraft was loaded to approximately 120 lb below maximum permitted gross weight. The pilot reported that the aircraft attained an indicated speed of 55 kts crossing the intersection of the two runways, approximately half way along the available runway length. The pilot stated that he rotated the aircraft and attained a height of approximately 6 ft above the ground, when the propeller momentarily stopped and started 4 times in quick succession before engine failure occurred. The aircraft then lost altitude, cleared the aerodrome boundary hedge and touched down in a cornfield in the overrun area, coming to rest some 75 metres beyond the boundary, on a stone and earth embankment astride a minor road. There was no fire, and the four occupants, who were all uninjured, vacated the aircraft by the normal means. An eyewitness on the ground noted that the aircraft appeared to have taken a longer than normal ground run, and then noted that the aircraft had become airborne with an unusually high nose attitude.

Subsequent examination of damage to the propeller indicated little evidence of rotation at the time of impact with the embankment. Fuel samples taken from the tank drain valves and carburettor revealed no contamination. No cause could be found for the engine failure.

Runway 24 is 504 metres long, being short grass, with an uphill slope of 1.9 %. Local reports indicated a crosswind from the south at 15 kts and dry conditions at the time of the accident, with a QNH of 1009 mb, and an air temperature of 23° C. The aircraft manufacturers handbook for this type indicates a take-off roll of 214 metres, and a take-off distance to 50 ft requirement of 503 metres at the accident weight, with 25 FLAP, MAXIMUM EFFORT on a PAVED LEVEL RUNWAY AT SEA LEVEL.

Factoring these figures in accordance with CAA AIC 90/1990 (Pink 12), and General Aviation Safety Sense Leaflet No. 7A (Aeroplane Performance), for the runway state and ambient conditions at the time of the accident, gives a minimum take-off roll requirement of 313 metres with no margins, or 417 metres with the recommended safety margin. Corresponding calculations for the take-off distance to 50 ft indicate a requirement of 738 metres unfactored, or 982 metres with the recommended safety margin. The take-off run available was 504 metres.