

No: 1/85

Ref: EW/G84/07/34

**Aircraft type and registration:** PA 28-181 G-BFXZ (light single-engined fixed wing aircraft)

**Year of Manufacture:** 1977

**Date and time (GMT):** 11 July 1984 at 1415 hrs

**Location:** Shipton Heights Farm, Gloucestershire (600 ft amsl)

**Type of flight:** Private

**Persons on board:** Crew — 1                      Passengers — 3

**Injuries:** Crew — Nil                      Passengers — Nil

**Nature of damage:** Damage to landing gear, wings, and fuselage

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

**Commander's Age:** 52 years

**Commander's total flying experience:** 9700 hours (of which 7000 were on type)

**Information Source:** Aircraft Accident Report form submitted by the pilot, and a letter from his legal representative.

The pilot intended to fly three passengers on a pleasure flight from a grass field near Andoversford. He had used the field for landing and take-offs before without incident. On the day of the accident the wind was blowing across the width of the field at about 15 kt, so the pilot elected to take-off into wind with a reduced take-off run available. The pilot had calculated that he would clear the fence by at least 17 feet.

The pilot states that during the take-off run the aircraft accelerated normally to 40 kt but then failed to accelerate further. He realised that he was not going to clear a fence and a bank beyond it, but that there was now insufficient distance remaining in which to stop. He elected to continue with the take-off. The undercarriage struck the bank and the aircraft turned through 180° and came to rest on a wall at the far side of a dual carriageway, having knocked down several road signs on the way.

The take-off run available was later measured by steel tape as 388 yards to the fence, there was an uphill slope of at least 4%, and the grass length was estimated by the land owner as less than 4 inches. The pilot states that the temperature was +16°C (the temperature at Brize Norton, 287 ft amsl, was 23°C at the time) and the aircraft weight was 2360 lbs. The pilot used the flight manual take-off graph for 25° flap; he calculated the take-off run required (TORR) as 288 yards and the take-off distance required (TODR) as 600 yards. He had applied a + 30% factor in his calculations, after applying a + 6.5% factor for the grass surface.

AIC 73/1982 contains much useful information for pilots contemplating taking off from short fields in light aircraft. In particular it suggests:—

- 10% should be added for each 2% slope
- 10% should be added for short dry grass
- 25% should be added for long, wet grass, soft ground or snow

Paragraph 5.1 in AIC 73/1982 states that:—

“The pilot should always ensure that the take-off distance required (TODR) does not exceed the runway length available.”

This was particularly important in this case as a main trunk road runs across the upwind end of the take-off run.