

Piper PA-28RT-2201 Arrow IV, G-BOUS

AAIB Bulletin No: 2/2000 **Ref:** EW/G99/11/15 **Category:** 1.3

Aircraft Type and Registration: Piper PA-28RT-2201 Arrow IV, G-BOUS

No & Type of Engines: 1 Lycoming IO-360-C1C6 piston engine

Year of Manufacture: 1979

Date & Time (UTC): 25 November 1999 at 1400 hrs

Location: Cark Airfield, Cumbria

Type of Flight: Private

Persons on Board: Crew - 1 - Passengers - 2

Injuries: Crew - Minor - Passengers - Minor

Nature of Damage: Extensive

Commander's Licence: Private Pilot's Licence

Commander's Age: 39 years

Commander's Flying Experience: 114 hours (of which 2 were on type)
Last 90 days - 8 hours
Last 28 days - 3 hours

Information Source: Aircraft Accident Report Form submitted by the pilot

The aircraft was attempting to take off from Runway 06 at Cark for a flight to Hawarden Airfield. The pilot reported that the surface wind was from 260° at 20 kt with the weather clear and sunny. As the aircraft became airborne, the pilot retracted the landing gear and *'used the emergency button to retract the wheels faster.'* The aircraft did not climb significantly and the stall warning horn began to sound. The pilot lowered the nose in an attempt to gain more airspeed and the landing gear lowered again automatically.

The aircraft hit a power cable which caused it to yaw significantly to the left before the cable broke. The pilot reported that he attempted to raise the landing gear once again, but the left main gear remained down. The aircraft touched down in a field, went through a hedge and came to rest against a railway embankment and a tree.

There was no fire. All of the occupants were wearing lap and diagonal harnesses and were able to evacuate the aircraft through the normal door.

The pilot considered that the aircraft may have suffered a loss of power.

An aftercast from the Meteorological Office indicated that at the time of the accident there was a warm front lying from Donegal Bay to Drogheda and Cardigan Bay. A moderate south westerly airstream covered the area, with outbreaks of slight rain. The visibility was about 15 km and the mean sea level pressure was 1019 mb. There was scattered cloud base 1,800 feet and broken cloud base 3,500 feet, with a temperature of +10°C and a dew point of +8°C. The surface wind was from 180° at 13 kt and the wind at 500 feet was from 210° at 25 kt.

The pilot reported that the weight of himself plus the two passengers on board was 43 stones (602 lbs). From the aircraft documentation, it was established that the aircraft's empty weight was 1,808 lbs. From refuelling records at Hawarden, it was ascertained that the aircraft departed from there with full fuel tanks, a usable total of 72 US gallons.

It is therefore likely that, at the time of the accident, the aircraft was operating close to the maximum allowable take-off weight of 2,750 lbs specified in the aircraft's Flight Manual/Pilot's Operating Handbook. From the take-off performance data contained therein, it was ascertained that for a take-off with no flap selected, from a paved, level, dry runway with zero wind component, the take-off distance to 50 feet was 2,200 feet (670 metres). The estimated ground roll would be about 80% of this figure, or 1,760 feet (536 metres). Runway 06 has a useable length of 400 metres with a 200 metre over-run at each end, with a rough asphalt surface.

With a 5 kt tailwind component, the handbook indicated that the take-off distance to 50 feet increased to 2,500 feet (762 metres), with a ground roll of 2,000 feet (609 metres). The indicated effect of using 25° flap for take off was to decrease the take-off distance to 50 feet to 1,600 feet (488 metres) in still air, or 1,850 feet (564 metres) with a 5 kt tailwind component.