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|---------------------------------------------|------------------------------------------------------------------------------------|-------------------|
| <b>Aircraft type and registration:</b>      | Piper PA28 140 Cherokee G-ATBN (light single engined fixed wing aircraft)          |                   |
| <b>Year of Manufacture:</b>                 | 1969                                                                               |                   |
| <b>Date and time (GMT):</b>                 | 2 December 1984 at 1430 hrs                                                        |                   |
| <b>Location:</b>                            | Brocks Farm, Stock, Essex                                                          |                   |
| <b>Type of flight:</b>                      | Private                                                                            |                   |
| <b>Persons on board:</b>                    | Crew — 1                                                                           | Passengers — 2    |
| <b>Injuries:</b>                            | Crew — None                                                                        | Passengers — None |
| <b>Nature of damage:</b>                    | Damage to landing gear, propeller and wings                                        |                   |
| <b>Commander's Licence:</b>                 | Private Pilot's Licence                                                            |                   |
| <b>Commander's Age:</b>                     | 18 years                                                                           |                   |
| <b>Commander's total flying experience:</b> | 150 hours (of which 100 were on type)                                              |                   |
| <b>Information Source:</b>                  | Aircraft Accident Report Form submitted by pilot and on-site inspection by the AIB |                   |

The pilot intended to fly with two passengers from a farm's private airfield at Stock to Stapleford Tawney, some 9 nm to the west. The reported wind was 250°/15 kt, but the pilot decided to take-off, using 25° flap, diagonally across the field in the direction of 300° in order to maximise the available take-off distance. However, the aircraft failed to become airborne and due to insufficient stopping distance then available to him, the pilot attempted to clear the fence/hedge at the end of his take-off run. The aircraft ran through the fence and hedge coming to rest in the adjacent field. The pilot reported a power loss with engine rpm having dropped to some 1500 rpm when the aircraft was halfway along its take-off run.

The maximum take-off run available to the pilot was later measured and found to be approximately 515 yards in extent. In addition, the field which was rough pasture, featured a distinct up-slope particularly over the first two thirds of the take-off run. The average gradient of the up-slope was an estimated 2°. The ground conditions were also reported by witnesses to be very wet. The pilot considered that carburettor icing may have been a contributory factor to the loss of power.

The use of 25° flap is a well known and widely taught short field take-off and obstacle clearance technique for this aircraft. However, take-off performance data for this configuration is not normally contained in current Owner's Handbooks or Flight Manuals, and the use of this procedure therefore, becomes purely a matter of judgement for the pilot in command in order to comply with Article 31 para g of the ANO.

Aeronautical Information Circular 73/1982 contains guidance on the "Take-off, climb and landing performance of light aeroplanes". Although the Circular is concerned mainly with published performance data, suggested Rules of Thumb indicate that an uphill slope of 2° requires an increase in take-off distance of 10%. Long, wet grass, soft ground or snow would require a further increase of 25%