Piel CP301A, G-AYEC

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Aircraft Type and Registration:	Piel CP301A, G-AYEC
No & Type of Engines:	1 Continental C90-14F piston engine
Year of Manufacture:	1958
Date & Time (UTC):	6 March 1997 at 1630 hrs
Location:	Netherthorpe Airfield, Nottinghamshire
Type of Flight:	Private
Persons on Board:	Crew - 1 -Passengers - 1
Injuries:	Crew - None - Passengers - None
Nature of Damage:	Severe
Commander's Licence:	Private Pilot's Licence
Commander's Age:	53 years
Commander's Flying Experience:	147 hours (of which 43 were on type)
	Last 90 days -6 hours
	Last 28 days -Nil
Information Source:	Aircraft Accident Report Form submitted by the pilot

Netherthorpe has two grass strips: Runways 06/24 which is 450metres long and 18/36 which is 382 metres long. The airfielddatum is 250 feet amsl and there is a published slope of 1.9%down on Runway 06. Runway 24 was in use when the pilot was preparingfor flight . He had used this runway many times before and hadintended to use it again but just before take-off, the surfacewind backed from south westerly to southerly at about 10 kt. Other aircraft switched to Runway 18 for take off and the pilotdecided likewise in the belief that the extra headwind componentwould counterbalance the shorter runway. Unfortunately the earlypart of Runway 18 has a pronounced upslope (figure not published)and the grass was wet. The aircraft did not accelerate at theusual rate but the pilot continued with the take-off anticipatingthat acceleration would improve once he crested the brow of therunway.

The aircraft took off but it failed to clear the airfield perimeterhedge. A 'No Waiting' sign about 4 feet high beside the hedgecaught the right hand wing removing the outer part of it whichcaused the aircraft to 'cartwheel'. Although the airframe sufferedmultiple structural disruption and came to rest inverted, theoccupants were unhurt and able to vacate though the right handside door.

The aircraft's mass was 20 pounds below MTWA. The published take-offground roll for the type at MTWA is 250 metres and the take-offdistance to 50 feet is 440 metres. When factored for: airportaltitude, wet short grass, and a 2% upslope, in accordance withguidance contained in CAA General Aviation Safety Sense leaflet7B Aircraft Performance, these distances become 366 metres and645 metres respectively in still air. If the sign is assumedto be 4 feet high and the take-off distance required to achievethis height is interpolated, the result is 388 metres. Consideringthe proximity of the hedge to the end of the runway, the predictedtake-off distance required is very similar to the take-off distanceavailable, although the effect of headwind is ignored. Theremay have been a temporary lull in the headwind during the takeoff but the pilot candidly admitted that he had not taken properaccount of the performance factors when deciding to use Runway18.

Given the age of the aircraft, some performance degradation relativeto manufacturer's data was inevitable. This is one reason whythe CAA Safety Sense Leaflet advises pilots to apply an 'additionalsafety factor' of 1.33 to calculations based on unfactored performancedata (which are determined using a new aircraft). The use ofthis factor is a legal requirement for public transport aircraftalthough it is usually absorbed within the scheduled performancetables.