

Aircraft Type and Registration:	Piper PA-28-161 Cherokee Warrior II, G-DENH	
No & Type of Engines:	1 Lycoming O-320-D3G piston engine	
Year of Manufacture:	1982	
Date & Time (UTC):	2 March 2003 at 1340 hrs	
Location:	Denham Airfield, Middlesex	
Type of Flight:	Training	
Persons on Board:	Crew - 2	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Wing leading edges dented, barbed wire wrapped around propeller	
Commander's Licence:	Commercial Pilot's Licence and Instructor's Rating	
Commander's Age:	38 years	
Commander's Flying Experience:	494 hours (of which 364 were on type) Last 90 days - 59 hours Last 28 days - 17 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and subsequent enquiries by the AAIB	

Synopsis

The aircraft landed long from a flapless approach on a relatively short runway. The pilot was unable to stop in the remaining distance available, collided with a fence and overran the airfield boundary. There were no injuries to the occupants. A contributory factor in the accident was the possibility of a tailwind component.

History of the flight

The flight was being conducted for the purposes of flight training and involved circuit practice. Runway 06 at Denham was in use, which has an asphalt surface and an available landing distance (LDA) of 701 metres and this was the third circuit of the training detail. On this circuit the instructor intended to demonstrate a flapless approach and landing to the student. The tower reported the wind to the pilot on finals as 340°M at 8 kt. The pilot recalled that his approach speed was between 70 kt and 75 kt and that he intended to touch down at the threshold numbers. Despite reducing the power

to idle the aircraft floated, eventually touching down shortly before the intersection with Runway 12/30, which is approximately half way along Runway 06. He decided that there was insufficient runway length available to perform a 'touch and go' but, based on previous experience, he believed that he could stop in the remaining distance. After touchdown he gently applied the brakes, to avoid locking the wheels, but this did not appear to appreciably slow the aircraft. The pilot stated that he then increased the brake pedal pressure, whilst pulling back on the control column, to place more weight on the mainwheels, but this also failed to produce much effect. It quickly became evident that the aircraft would overrun the runway and so he steered it onto the grass to the left side of the runway. He also checked to ensure that the throttle was fully closed. Despite his actions, there was still insufficient distance available in which to stop and the pilot was unable to prevent the aircraft from colliding with the boundary fence. The aircraft travelled through the fence and came to rest partially blocking a public road just outside the airfield boundary.

Weather conditions

Weather conditions were good with nil precipitation and the runway surface was dry. The London Heathrow Airport METAR for 1350Z gave a wind of 300°M/12 kt, variable between 270°M and 350°M. Runway 24 had been in use in the morning, but the wind direction in the afternoon had favoured a change to Runway 06. The pilot of an aircraft, which landed shortly before G-DENH, believed that he had experienced a tailwind during the approach as he had used up far more runway than usual during the landing.

Aircraft braking system

After the accident, the chief pilot and an engineer from the flying training organisation checked the operation of the brakes. They reported that there was no sign of sponginess at the pedals and the brake pads were confirmed to be contacting the discs. The aircraft was later towed back to the apron. During the tow, the brakes were tried and appeared to operate satisfactorily at slow speed. As the damage was limited to the wing leading edges, the following day the aircraft was taxied to the maintenance area on the other side of the airfield in preparation for repair. The brakes operated satisfactorily during the taxi. The brakes were subsequently disassembled for examination by the company's maintenance organisation. The only defect found was a split in the piston seal on the right toe-brake cylinder at the left seat position. As the instructor was seated in the right seat, this would not have accounted for the apparent lack of effectiveness of his brakes. A pilot who hired the aircraft on the morning of the accident did not report any problems with the brakes. The runway was inspected by the AAIB a few days after the accident, but no evidence of skid marks was found.

Discussion

The pilot felt that the poor braking performance was attributable to a defect in the braking system. The absence of skid marks on the runway may be indicative that the brakes were not working at their full efficiency, or that they were not applied sufficiently hard so as to lock the wheels. No defects were reportedly found in the braking system that could account for the poor braking performance perceived by the pilot.

The fact that the aircraft landed long was a significant factor. The instructor stated that he had touched down at a similar location on the runway before and had been able to stop in the available distance without difficulty. The wind information reported to pilots by the tower is the instantaneous wind speed and direction, as measured by an anemometer mounted on the control tower. This is located some distance from the runway and so it is conceivable that the actual wind on the approach may differ somewhat from that reported to the pilot. On this occasion, the wind was largely across the runway, but it was possible that there may have been a slight tailwind component, of which the pilot may not have been aware. This would have increased the groundspeed and thus the landing distance. The flight manual for the PA-28-161 does not contain landing performance data for a flapless approach and this, therefore, requires pilots to make educated judgements in assessing the landing run for the given conditions. Advice contained in the AOPA Flight Instructors Manual (R.D. Campbell) states:

'...Due to the absence of drag from the flaps there will also be a longer float and landing run, therefore the touch-down should be made as near the runway threshold as possible...'