ACCIDENT

Aircraft Type and Registration:	Piper PA-28-161 Cherokee Warrior II, G-BSXB	
No & Type of Engines:	1 Lycoming O-320-D3G piston engine	
Year of Manufacture:	1984 (Serial no: 28-8416125)	
Date & Time (UTC):	16 November 2017 at 1141 hrs	
Location:	Wolverhampton (Halfpenny Green) Airport, Staffordshire	
Type of Flight:	Private	
Persons on Board:	Crew - 2	Passengers - None
Injuries:	Crew - 2 (Minor)	Passengers - N/A
Nature of Damage:	Extensive	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	73 years	
Commander's Flying Experience:	925 hours (of which 755 were on type) Last 90 days - 6 hours Last 28 days - 3 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB	

Synopsis

An approaching weather front caused a sudden change of wind direction which the pilot had not anticipated and the resulting tailwind led to a touchdown more than halfway along the runway. The pilot encountered difficulty reducing the aircraft's speed and made a late attempt to abort the landing and take off again. However, the aircraft struck the airfield boundary hedge, crossed a road and hit a second hedge before coming to rest with the left wing detached from the fuselage.

History of the flight

When the pilot departed Wolverhampton (Halfpenny Green) Airport he was aware there was a cold weather front to the northwest which was moving towards the airfield. Before taking off, from the asphalt Runway 16, the Flight Information Service Officer (FISO) informed him by radio that the estimated[1] wind was from 230º at 8 kt. After leaving the circuit area, the pilot encountered deteriorating weather conditions including low cloud, rain, reduced visibility and turbulence. Approximately 20 minutes after his departure, he told the FISO he was returning to the airfield and was advised that Runway 16 was still in use.

Footnote

[1] The airfield anemometer was unserviceable so the FISO primarily referred to a nearby windsock to estimate the wind.

The pilot re-joined the circuit for Runway 16, which has a landing distance available of 858 m, and made a radio call stating he was on the downwind leg. This call was acknowledged by the FISO who asked the pilot to report on final approach. Less than two minutes later, the FISO noticed the wind had veered and called the aircraft. In response the pilot announced he was on final approach, so the FISO told him there was a tailwind on this approach because he estimated the wind was now from 300º at 10 kt. While transmitting this message, the FISO spotted the aircraft at approximately 10 ft aal, further than halfway along Runway 16. He watched as the aircraft touched down adjacent to the Precision Approach Path Indicators (PAPIs) for Runway 34 which are situated 393 m from the stop-end of Runway 16.

According to the pilot, the aircraft seemed reluctant to descend while on final approach, but he did not remember hearing the FISO inform him of a tailwind. He stated that the visibility had reduced because of rain, but he appreciated that he was still airborne when more than halfway along Runway 16. His passenger, a former flight instructor, twice suggested that he went around but the pilot continued because he still believed he had sufficient runway available to complete a landing.

After touching down, the pilot encountered difficulty decelerating due to the wet surface and the tailwind so, when he realised the end of the runway was approaching, he increased power and attempted to go around. Once airborne, he was aware of the left wing dipping, probably because he had not applied sufficient right rudder to counteract the increased engine torque, and the left wingtip then struck a hedge at the airfield boundary. This caused the aircraft to lose height as it crossed a public road and before impacting a second hedge with a co-located fence, on the south side of the road. As a result of the second collision the left wing detached, and the aircraft spun around and stopped abruptly a few metres into a grass field (Figure 1).

Figure 1

G-BSXB, with its left wing detached, facing back towards the second hedge

The airfield crash alarm had been activated by the FISO when the aircraft was still approximately 100 m from the stop-end of Runway 16, because he realised an accident

was imminent. He observed the aircraft adopt a nose-up attitude and cross the 46 m grass area beyond the runway, before striking the boundary hedge, which is approximately two meters high, and disappear from his view.

When the airfield Rescue and Fire Fighting Service (RFFS) arrived, the pilot and his passenger were making their own way out of the aircraft, although both then required treatment for minor head injuries. The RFFS noted that the aircraft's magneto key had been withdrawn but that the electric master switch and the fuel pump were set to ON, while the throttle remained at its maximum open setting, so these controls were all made safe.

Meteorology

The Met Office's weather chart (F215) for the forecast weather below 10,000 ft on the day of the accident, indicated that a cold front was moving across the British Isles in a southeasterly direction. This front contained isolated and embedded cumulonimbus clouds and the chart depicted that it would pass over the Wolverhampton area during the late morning.

Birmingham International Airport, approximately 19 nm to the southeast, is the nearest airfield to Wolverhampton for which a Terminal Aerodrome Forecast (TAF) is produced. The Birmingham TAF that was current before the flight commenced, suggested the wind direction at Birmingham would change from southwesterly to northwesterly between 1100 hrs and 1300 hrs. The TAF also indicated the possibility of the visibility and cloudbase at Birmingham reducing temporarily, with associated rain and with gusts of wind up to 25 kt in strength.

A senior flight instructor who was present at Wolverhampton that morning, stated that the weather was deteriorating, the sky was darkening and it was drizzling when the aircraft took off. Later, when he heard the crash alarm, he noted that it was raining and estimated from the windsock that the wind was from 340º at 15 kt. He observed that the sky cleared and the rain stopped a few minutes later. He also commented that, given the position of the windsock, a pilot approaching Runway 16 might find it difficult to discern that it was aligned in the reciprocal direction to that expected.

A helicopter instructor, who did not witness the accident but who was flying in the vicinity when it occurred, was aware of the wind changing direction quickly from southwesterly to northwesterly. In association with this, he saw the windsock indicate an increase in wind strength, and he believed these change were due to a weather "cell" located to the west of the airfield.

AAIB Comment

The CAA's '*Skyway Code*' (CAP 1535) reminds pilots that they are required to consider the meteorological situation before commencing a flight. A section titled '*Pre-Flight Preparation'*, informs pilots that the Met Office is the main source of aviation weather information in the UK and the document provides detailed guidance to help them interpret charts and codes. It stresses that pilots should have a good working knowledge of the

conditions associated with common weather features such as warm and cold fronts. The Met Office also provides a '*Pilot Resource Portal*'[2] which aims to ensure pilots can make best use of the available forecasts and this compliments the '*General Aviation Weather Briefing Portal*'[3].

One hazard that can be associated with passage of a cold front is windshear. The UK '*Aeronautical Information Circular 84/2008 (Pink 150)*' provides guidance relating to low altitude windshear and how it can effect an aircraft in flight. This circular can be downloaded from the NATS Aeronautical Information Service website.

CAA Safety Sense Leaflets (SSL) are a further source of useful guidance material for pilots and can be downloaded from the '*Publications*' section of the CAA's website. SSL 1e '*Good Airmanship*' addresses many aspects of general aviation flight and tells pilots to:

> *'Get an aviation weather forecast, heed what it says and make a carefully reasoned GO / NO-GO decision.'*

In the same document there is advice concerning landings which states a pilot should:

> *'Go-around if not solidly 'on' in the first third of the runway, or the first quarter if the surface is wet grass.'*

Footnote

[2] See https://www.metoffice.gov.uk/aviation/ga/pilot-resource-portal
[3] See https://www.metoffice.gov.uk/aviation/ga-briefing-services