SERIOUS INCIDENT

Aircraft Type and Registration:	PS-28 Cruiser, G-DTFT	
No & Type of Engines:	1 Rotax 912ULS2 piston engine	
Year of Manufacture:	2014 (Serial no: C0506)	
Date & Time (UTC):	23 August 2017 at 1616 hrs	
Location:	Leeds Bradford Airport	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	None	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	34 years	
Commander's Flying Experience:	78 hours (of which 5 were on type) Last 90 days - 13 hours Last 28 days - 7 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

After losing directional control during the takeoff roll, the pilot realised the aircraft had achieved an acceptable speed and initiated an abrupt rotation. Once airborne the aircraft may have stalled but it completed a low-level orbit, passed close to buildings and almost collided with the ground, before the pilot regained control and established a climb.

History of the flight

The pilot was cleared to take off on Runway 32, from the intersection of Taxiway L, with a crosswind of approximately 9 kt from the left. He gradually applied full power and used right rudder to keep the aircraft straight as it accelerated but, at approximately 30 kt IAS, the aircraft began to veer left. He did not manage to correct this and saw the aircraft was heading towards the edge of the runway at approximately 50 kt IAS. He pulled back quickly on the control stick to initiate rotation and prevent the aircraft over-running onto grass.

As the aircraft rotated, the pilot was aware the climb-out path ahead was clear but he believed that he may have pulled back on the control stick too harshly, because he felt the left wing drop and thought the aircraft was stalling. His recollection of the next few seconds of flight was muddled but he remembered seeing that he was heading towards a hangar before the left turn tightened. He was not aware of making any control inputs but he did transmit a MAYDAY call on the radio and then found himself distracted when ATC asked for information.

At this time, the pilot believed that he was overflying the hangar area and he sensed the aircraft stalling again. He remembered hearing the stall warner sounding but could not recall if this happened immediately after takeoff or during the turn; it may have activated more than once. As the left wing dropped further, the pilot saw he was getting closer to the ground but believed he was too low to attempt a stall recovery. He is unsure how the aircraft avoided impact with the ground and was surprised to see the runway ahead. However, this helped him to re-orientate himself and he managed to regain control and to roll-out on the runway heading; having turned through 360º. From this position he entered a climb and joined the left hand visual circuit, subsequently landing without further difficulty.

Recorded data

A recording of the pilot's MAYDAY communications to ATC contained three discernible transmissions over an 11 second period. He firstly transmitted his abbreviated callsign and followed this by twice saying "MAYDAY, MAYDAY, MAYDAY". ATC responded to both distress calls by instructing the pilot to "PASS YOUR MESSAGE". Then, 13 seconds after his second MAYDAY call, the pilot stated "REQUEST RETURN TO…LEEDS, GOLF FOXTROT TANGO, NO EMERGENCY".

The takeoff and the low-level manoeuvres were recorded by several CCTV cameras and by a witness with a mobile phone. The recordings confirmed that when the aircraft approached the edge of the runway, south of Taxiway M (Figure 1), it rotated abruptly and rolled into a left turn but the pitch attitude then reduced and it made a short, shallow climb until it reached a height estimated to be no greater than 100 ft agl. At one point the aircraft appeared to start rolling out of the turn onto a south-westerly track, which might have taken it clear of the hangar area, but the angle of bank then increased suddenly.

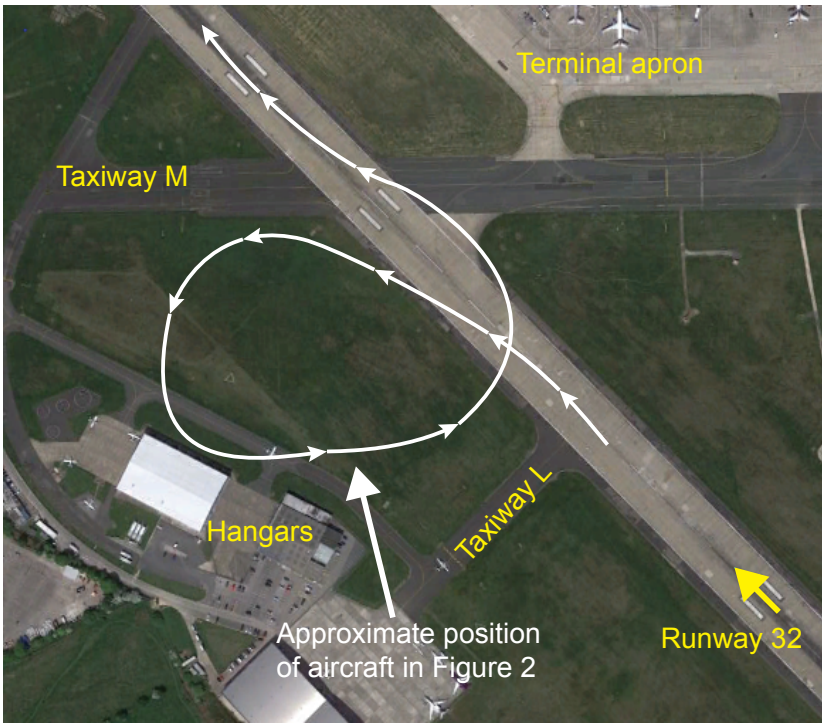

Figure 1

Aerial view of Leeds Bradford Airport (© 2018 Google, Image © 2018 DigitalGlobe)

The aircraft continued turning, while flying at approximately the same height as the roof of the tallest hangar. It appeared to remain over the area between the hangars and the runway, with its angle of bank estimated to reach 60º. Then, as the aircraft turned back towards the runway, it descended below the level of the hangar roofs and the angle of bank began to reduce (Figure 2) but the left wingtip almost touched the grass while still in a left turn towards the runway, with an estimated angle of bank of 40º. However, the aircraft then started climbing again and it rolled out of the turn in the vicinity of the runway while climbing towards the north-west.

Figure 2

G-DTFT with a bank angle exceeding 40º, shortly before the wingtip almost touched the grass
(Photograph courtesy of Mr D Firman)

Other information

The operator which hired the aircraft to the pilot and the airport operator both investigated this serious incident. The aircraft operator reported that the pilot had learnt to fly in Piper PA-28 aircraft and during early lessons he had difficulty applying sufficient right rudder after takeoff, but this was noted to be a problem often encountered at this stage in training. The pilot subsequently went solo at Leeds in October 2016 and passed his PPL skills test, at the first attempt, on 4 June 2017.

After gaining his PPL, the pilot undertook 2 hours 25 minutes dual conversion training on the PS-28 Cruiser, some of which was flown in gusty conditions, but it was not clear if he experienced a crosswind from the left while taking off under instruction. He made two solo flights in G-DTFT during the 10 days which preceded the serious incident.

On the day of the flight, the pilot had delayed his departure due to the strength of the wind; the maximum demonstrated crosswind for the PS-28 is 12 kt. He reported that, before advancing the throttle, he mentally reviewed his actions if he rejected the takeoff; to close

the throttle, keep the aircraft straight and apply the brakes. However, rather than doing this when the aircraft deviated from the centreline, the pilot hastily pulled back on the control stick as he approached the edge of the runway, aware that the normal rotation speed had been achieved.

The aircraft operator reported that the PS-28 is lighter than the PA-28 and is more sensitive to control inputs and power changes. It was noted that directional control was only lost after power had been applied and therefore the crosswind from the left may have influenced the left turn, with insufficient right pedal being applied in response. The operator believed that throughout the low level orbit, the aircraft was flying in a partially stalled state until the pilot regained control close to the ground.

Inspection of the aircraft revealed no damage and there were no indications that the wingtip had made ground contact. The airport operator noted that it was fortuitous that the aircraft did not collide with a building or with the ground.

Following the operator's investigation, the pilot received further training and passed a check flight with the chief instructor but he was restricted to flying Piper PA-28 aircraft until he gained more experience.