Accident

Aircraft Type and Registration:	Piper PA-22-150, G-AREL	
No & Type of Engines:	1 Lycoming O-320-A2B piston engine	
Year of Manufacture:	1960 (Serial no: 22-7284)	
Date & Time (UTC):	25 April 2023 at 1324 hrs	
Location:	Hamilton Farm Airstrip, Ashford, Kent	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Nosewheel collapsed and bent backwards. Right wingtip damaged.	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	73 years	
Commander's Flying Experience:	339 hours (of which 93 were on type) Last 90 days - 3 hours Last 28 days - 1 hour	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

The pilot attempted a takeoff on Runway 04 at Hamilton Farm Airstrip but, with the aircraft not yet airborne or at flying speed at the pre-planned go/no-go decision point on the runway, the pilot aborted the takeoff. As the pilot braked, he was unable to prevent the aircraft leaving the runway and the nosewheel dug in and collapsed. The aircraft was pitched onto its nose and right wing but neither occupant was injured.

History of the flight

The aircraft arrived at Hamilton Farm Airstrip from White Waltham Airfield, landing on Runway 04. This flight was conducted by another pilot with the accident pilot flying as a 'passenger'. The intention was for the two pilots to swap seats and roles for the flight back to White Waltham.

Before departure both pilots and the airfield operator walked the length of the runway to inspect the conditions. They discussed the best direction for departure considering the obstacles, the condition of the runway as well as the wind direction, which was variable in direction but predominately from the north or north-east. The pilot decided on a departure from Runway 04 but planned a go/no-go decision point at approximately the midpoint of the runway due to the conditions and the risk of the tall trees at the departure end.

The takeoff run commenced, but the aircraft was not at takeoff speed or airborne at the decision point so, as planned, the pilot closed the throttle and began to brake. Under braking the aircraft began to veer to the left and, despite the pilot's control inputs, he was unable to prevent it leaving the runway. Although the aircraft was already significantly slowed, the nosewheel dug in abruptly and collapsed, tipping the aircraft onto its nose and right wing. Neither occupant was injured and they were able to vacate the aircraft without assistance.

Figure 1

G-AREL at the accident site (used with permission)

Aerodrome information

Hamilton Farm Airstrip near Ashford in Kent has a single grass runway orientated 04/22. The runway is 630 m long with a Take Off Run Available[1] of 500 m on Runway 04, and 620 m on Runway 22. The runway is described as level from the north-east end to the midpoint, then as having a two degrees upslope to the south-west end. Takeoff runs from Runway 04 would therefore begin on a downwards slope and, conversely, from Runway 22 would end on an upslope.

Footnote

[1] Take Off Run Available - The length of runway declared available and suitable for the ground run of an aeroplane taking off.

The information provided for the airfield also describes trees, which are 15 m tall, at the end of Runway 04 and a 1 m hedge/wire fence at the end of Runway 22.

The Met Office summary of the weather in April 2023 describes the level of rainfall as:

> *"close to average overall, but with regional variations, most parts of Scotland being drier than average, but southern and eastern parts of England being rather wet, most notably in Kent"*[2]

Although on the day of the accident the weather was fine with sunshine, the grass was wet and parts of the airstrip were described as waterlogged, especially parts of the beginning of Runway 22 and those lower parts of the airstrip.

Strip flying

The CAA Safety Sense Leaflet 'Strip Flying'[3] contains guidance for pilots on operating from airstrips. The guidance for takeoff includes conducting an inspection, carefully doing takeoff performance calculations using the recommended performance factors, as well as picking a point on the runway where you will abort the takeoff if a certain airspeed has not been achieved. Wet grass alone can add 30% to the takeoff distance with soft ground adding an additional 25%.

The leaflet also recommends talking to the operator of the strip before departure and, if possible, visiting by ground transport before the flight. The pilot who flew G-AREL into Hamilton Farm had visited the airstrip although he had not previously flown there. Neither pilot of G-AREL had been able to speak directly to the operator of the airfield before the flight to Hamilton Farm. Speaking with the operator might have cautioned them about using the airfield that day.

The AAIB has previously investigated a number of accidents where takeoffs have been attempted on wet and/or soft ground, often with little or no planning and preparation. Some of these accidents have resulted in fatal injuries to the occupants as a result of either trying to get airborne at too slow a speed as the end of the runway approaches, or by the aircraft running through obstacles at the end of the runway. The most recent case is G-CIIR in October 2020[4].

Footnote

[2] https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/mwr_2023_04_for_print.pdf [Accessed June 2023]
[3] http://publicapps.caa.co.uk/docs/33/CAA8230_SafetySense_12-Strip-Flying.pdf [Accessed June 2023].
[4] https://assets.publishing.service.gov.uk/media/61b1d596e90e0704439f4371/Cessna_FRA150L_Aerobat_G-CIIR_12-21.pdf [Accessed June 2023]

Analysis

After careful planning and preparation, the pilot attempted to takeoff from Runway 04 at Hamilton Farm. As he reached the midpoint of the runway the aircraft was not yet at takeoff speed or airborne, and therefore he closed the throttle as planned and aborted the takeoff. As he braked, the aircraft veered to the left and the pilot was unable to prevent the aircraft leaving the runway where the left wheel dug in the aircraft pitched onto its nose and right wing.

The conditions on the runway were wet and parts of the runway were described as waterlogged, but the pilot had prepared for the conditions and was therefore able to react accordingly. Planning a go/no-go point prevents confusion and prevents the takeoff being continued when the performance is not as good as expected. Continuing the takeoff often presents a far greater risk to the aircraft and its occupants than aborting. The accident occurred at a slow speed and as such the damage to the aircraft was limited and both occupants were uninjured.

Conclusion

Careful planning, preparation and execution of a takeoff, including the use of a go/no-go point meant that the accident did not result in significant damage to the aircraft or injuries to the occupants. The AAIB has investigated a number of accidents, often resulting in fatal injuries to the occupants, where such steps have not been taken and the takeoff continued.