ACCIDENT

Aircraft Type and Registration:	Piper PA-38-112 Tomahawk, G-BMVM	
No & Type of Engines:	1 Lycoming O-235-L2C piston engine	
Year of Manufacture:	1979 (Serial no: 38-79A0025)	
Date & Time (UTC):	14 June 2017 at 0930 hrs	
Location:	Brimpton Airfield, Berkshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Propeller, engine, fuselage, nosewheel, wings	
Commander's Licence:	National Private Pilot's Licence	
Commander's Age:	72 years	
Commander's Flying Experience:	15,000 hours (of which 34 were on type) Last 90 days - 1 hour Last 28 days - 1 hour	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

While taking off from Runway 25 at Brimpton Airfield the aircraft did not accelerate sufficiently to achieve takeoff speed and overran the end of the runway. The pilot considered that the variable wind conditions may have led to a tailwind component, resulting in a required takeoff distance greater than that which was available.

History of the flight

The pilot intended to fly from Brimpton Airfield to Thruxton Airfield. He stated that the weather for the departure from Brimpton was forecast to be good, however prior to departing he observed that the wind was gusting at approximately 8 to 10 kt with an estimated mean direction of 180°, and varying by approximately 30° in each direction. He considered that this favoured a departure from Runway 25 and he described the grass runway surface as being dry and well cut. However, the grass on the 50 m runway starter extension had not been cut and as the extension has a significant upslope, he elected not to use it, instead commencing the takeoff from the Runway 25 threshold.

The pilot reported that the initial takeoff roll on Runway 25 appeared normal, but as the takeoff progressed, the aircraft did not achieve the expected acceleration. He commented that there is a hump at the mid-point of the runway, by which point he normally expects the aircraft's speed to be 50 kt. On this occasion the pilot observed the speed to be 45 kt, but he fully expected the aircraft to achieve the 55 to 60 kt required for takeoff before reaching

the end of the runway. However, there was no further acceleration and the aircraft overran the runway, coming to rest nose-down in a crop field approximately 10 to 15 m beyond the runway end. The pilot was uninjured and exited the aircraft without assistance. He attributed his lack of injury to the fact that he had been wearing a full harness.

Another pilot at the airfield, who had elected not to fly his own aircraft after observing the local weather conditions, witnessed the accident. He noted by reference to the airfield anemometer and windsock, that the wind direction was varying between 220º and 050º, with a strength of approximately 2 to 4 kt, occasionally increasing to 8 kt. He also noted the temperature as 24 ºC and QNH as 1016 hPa. Concerned about a possible tailwind and the implications on takeoff performance of his own aircraft, he elected not to fly and was closing up his aircraft when he saw G-BMVM commence its takeoff roll. He reported that by the mid-point of the runway it was evident to him that the accident aircraft had insufficient speed to take off and had expected to see it brought to a stop, but instead it continued and subsequently overran the end of the runway.

Discussion

The aircraft was based at Brimpton and regularly operated from there without any takeoff performance issues. The accident pilot retrospectively carried out an approximate takeoff performance calculation which indicated that, at maximum weight, the takeoff distance required on a grass runway would be 519 m, and the presence of a 5 kt tailwind component would increase that to 621 m. Although the aircraft weight at the time of the accident was 190 lb less than the maximum takeoff weight, which would have somewhat reduced the actual takeoff distance required, Runway 25 at Brimpton is 520 m long. Given the ambient conditions on the day, the presence of a tailwind would have meant that adequate takeoff performance could not be assured.

The pilot considered that the wind may have changed direction during the latter part of the takeoff roll giving a tailwind component, which required a greater takeoff distance than that which was available.

The CAA publication Safety Sense Leaflet 07C *'Aeroplane Performance*' includes useful advice on aircraft takeoff performance planning.