

ACCIDENT

Aircraft Type and Registration:	Aeroprakt A22-LS Foxbat Supersport 600, G-CHSY	
No & Type of Engines:	1 Rotax 912ULS piston engine	
Year of Manufacture:	2013 (Serial no: LAA 317B-15186)	
Date & Time (UTC):	16 July 2019 at 1515 hrs	
Location:	Otherton Hall Farm, Staffordshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - 1 (Serious)	Passengers - 1 (Serious)
Nature of Damage:	Aircraft destroyed	
Commander's Licence:	Private Pilot's Licence (Aeroplanes)	
Commander's Age:	67 years	
Commander's Flying Experience:	621 hours (of which 524 were on type) Last 90 days - 8 hours Last 28 days - 6 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and further enquiries made by the AAIB	

Synopsis

The aircraft stalled shortly after becoming airborne. It came to rest upright in a crop field at the end of the runway and both occupants sustained serious injuries. The aircraft was written off.

History of the flight

The pilot, who was the owner of the aircraft, flew it to Otherton Airfield on the morning of the accident. He was accompanied by a friend who also held a National PPL.

The aircraft underwent an annual check at Otherton before the UK importer completed a test flight with the pilot's friend onboard. No anomalies were identified during the annual check and the aircraft instrumentation, handling and performance were reported to be normal throughout the flight.

Accident site

Photographs showed that the aircraft came to rest upright in a crop field immediately beyond the end of the runway. They indicated that the aircraft struck the ground with very little forward speed and with the right wing low. Damage sustained by the propeller indicated that it was turning when the aircraft hit the ground.

It was reported that a visual assessment of the pitot / static system after the accident showed no obvious anomalies.



Figure 1

General view of damage sustained in the accident

Aircraft information

The Aeroprakt A22-LS Foxbat is a high-wing, strut-braced, two-seat microlight aircraft of 450 kg maximum gross weight, with a tricycle undercarriage. It is only available in the UK in the form of a quick-built kit, which is manufactured in the Ukraine. The aircraft is of riveted aluminium construction and the flying surfaces are fabric covered. G-CHSY was equipped with a Dynon Skyview avionics system, which has non-volatile memory (NVM) that records flight data.

Investigation

Weight and balance

The pilot provided comprehensive weight and balance calculations, which indicated that the aircraft was within the acceptable limits with a takeoff mass of approximately 567 kg.

Pilot's Operating Handbook

The Pilot's Operating Handbook (POH) states that the stall speed at Maximum Take Off Weight (MTOW) and full flap is 37 mph (approximately 32 kt). The stall speed at MTOW and with the flaps retracted is 48 mph (approximately 42 kt). The MTOW is 650 kg.

The handbook specifies V_x to be 56 mph (approximately 49 kt) and V_y to be 62 mph (approximately 54 kt).

Runway information and takeoff technique

Otherton is an unlicensed airfield and there are three grass runways. The runway used for the accident departure was Runway 34, which is 300 m long.

According to the POH, the minimum takeoff distance at MTOW for standard ICAO atmosphere, mean sea level, no wind and a hard and even runway is 100 m. The handbook acknowledges that actual takeoff distance will depend on the condition of the aircraft, environment and pilot skill. The handbook describes the recommended techniques for both a short / soft field takeoff and the climb, Figure 2.

<p>5.7 Short/soft field takeoff</p> <ol style="list-style-type: none">1. Flaps – EXTEND FULLY.2. Hold position – OCCUPY.3. Takeoff distance – CHECK if sufficient.4. Rudder pedals – NEUTRAL.5. Throttle – gradually FULL POWER.6. Brakes – RELEASE.7. Yoke – elevator NEUTRAL, ailerons AGAINST CROSSWIND.8. Rudder pedals – maintain takeoff direction.9. Yoke – PULL gently to lift the nose wheel at 40 km/h (25 mph, 22 kts).10. Liftoff – at 65 km/h (40 mph, 35 kts).11. Accelerate to at least 90 km/h (56 mph, 49 kts) at 1-2 m (3-7 ft) and start to climb.12. Speed – SET best angle of climb speed $V_x = 90$ km/h (56 mph, 49 kts). <p>5.8 Climb</p> <ol style="list-style-type: none">1. Speed – SET: best angle of climb speed $V_x = 90$ km/h (56 mph, 49 kts) or best rate of climb speed $V_y = 100$ km/h (62 mph, 54 kts) in strong turbulence +10 km/h (6 mph, 5 kts).2. Flaps – RETRACT SLOWLY at safe altitude.3. EGT – max. 850°C (1562°F).4. Coolant temp. – max. 120°C (248°F).5. Oil pressure – max. 5.0 bar (73 psi).
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Figure 2

Takeoff and climb techniques described in the POH

Pilot's description of the events

The pilot reported that the grass was between 100 and 150 mm long and the wind was "straight down the runway at about 6 kt". He noted that prior to the accident flight, there was a discrepancy between the altitude on the back-up instruments and the Skyview display. He reported that these "were seen to disagree with each other by more than the usual few feet". He was running an application that displayed GPS altitude on his tablet computer and he decided to continue with the flight with the intention of diagnosing the altitude anomaly when he was airborne.

The pilot selected first stage of flap for the takeoff, which the aircraft dealer confirmed was appropriate for a departure from Otherton. The nosewheel left the ground at 20 kt and the pilot kept the speed between V_x and V_y using the information displayed on the Skyview.

The pilot reported that the left wing dropped at a height of approximately 100 feet and he tried, unsuccessfully, to correct this using the ailerons. He asked his passenger to retract the flaps and checked the airspeed, which he reported was slightly higher than V_y . The pilot considered the pitch attitude of the aircraft to be normal at this point. As the aircraft reached approximately 60° left roll the pilot reduced the engine power and applied full right rudder to try to correct for the wing-drop. Just before the aircraft struck the ground the engine power was reduced to idle.

The pilot attributed the accident to the Skyview system indicating an incorrect, high, airspeed.

The AAIB successfully downloaded the data recorded by the aircraft's Skyview system, which included the post-check test flight and the accident flight. The data from the accident flight showed that the aircraft became airborne at an indicated airspeed of approximately 30 kt and the speed fluctuated between approximately 26 kt and 32 kt during the climb. When the aircraft achieved its maximum height of about 70 feet above the airfield the indicated airspeed was 28 kt. The data showed that the engine speed started to reduce as the left wing dropped, and that the aircraft achieved a maximum roll angle of approximately 57°. The roll direction reversed as the aircraft descended and the engine speed increased slightly just before the aircraft struck the ground with the right wing low. The aircraft was airborne for approximately 16 seconds.

The AAIB were informed that the Skyview had been tested by an approved repair agent after the accident and there were no anomalies with the processing and display of the flight data, including airspeed and altitude.

Conclusion

The aircraft weight was reported to be below MTOW and the pilot stated that the first stage of flap was used for the take off. The runway distance available at Otherton was sufficient for the aircraft to take off safely and the preceding check-flight from the same runway had been uneventful.

The pilot reported that prior to the flight, there was an anomaly between the altitude on the standby instruments and the Skyview. He stated that he flew the departure between V_x and V_y , as indicated on the Skyview but that he now believed that the airspeed displayed on the Skyview was incorrect.

It was reported that a visual assessment of the pitot / static system after the accident showed no obvious anomalies. Data recovered from the Skyview indicated that the aircraft became airborne very close to the stall speed for an aircraft at MTOW and full flap. The airspeed remained low for the remainder of the flight.

The aircraft climbed to a height of approximately 70 feet and the left wing dropped. The pilot stated that the flaps were retracted after the wing dropped. This would have increased the stall speed such that recovery would be unlikely given the height available.

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