

## Accident

<b>Aircraft Type and Registration:</b>	Jabiru UL-430, G-RUFS
<b>No &amp; Type of Engines:</b>	1 Jabiru 2200A piston engine
<b>Year of Manufacture:</b>	1999 (Serial no: PFA 274A-13359)
<b>Date &amp; Time (UTC):</b>	13 August 2022 at 1350 hrs
<b>Location:</b>	Lower Upham Airfield, Wiltshire <sup>1</sup>
<b>Type of Flight:</b>	Private
<b>Persons on Board:</b>	Crew – 1                      Passengers - 1
<b>Injuries:</b>	Crew - 1 (Serious)      Passengers - 1 (Serious)
<b>Nature of Damage:</b>	Aircraft substantially damaged
<b>Commander's Licence:</b>	National Private Pilot's Licence
<b>Commander's Age:</b>	55 years
<b>Commander's Flying Experience:</b>	1,449 hours (of which 824 were on type) Last 90 days - 21 hours Last 28 days - 9 hours
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB

## Synopsis

During a go-around, the aircraft collided with trees at the upwind end of the runway. It is likely that the aircraft was unable to climb above the trees due to the reduced performance in the high temperature and rising ground.

## History of the flight

The pilot and passenger were flying back from Bakersfield Airfield (near Corby) to Lower Upham Airfield (near Swindon). On arriving overhead at 1,800 ft agl, the pilot estimated the windsock was showing an easterly wind at approximately 6 kt, so elected to land on the easterly runway. He descended into the circuit and flew a normal approach with full flap and an airspeed of approximately 55 kt. He recalled that as the aircraft approached the threshold the airspeed was "a little fast" and on touchdown the aircraft bounced, so he decided to go around. He applied full power and attempted to climb ahead. The airspeed had dropped to 45 kt so he lowered the nose slightly to regain airspeed. He recalled seeing 55 kt on the airspeed indicator and retracting the first stage of flap but the aircraft was not climbing as expected. He felt the engine was operating normally but the aircraft was not climbing. He recalled that with rising ground and trees ahead he attempted to make a right turn and also remembered the aircraft hitting the ground.

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## Footnote

<sup>1</sup> Following publication it was noted that the incorrect county was included in the report header. The accident occurred at Lower Upham Airfield in Wiltshire, not Hampshire. The online report was corrected on 9 February 2023.

The passenger, who was also a qualified pilot, had a similar recollection. He recalled the pilot applying full power on the go-around but the aircraft not achieving a good climb. He remembered looking to his left and seeing trees at the same height. He then recalled a loud bang and the aircraft hitting the ground.



**Figure 1**

G-RUFS after the accident with the runway in the distance ahead of the aircraft. The aircraft is facing in the opposite direction to its flightpath before impact

A witness who was parked in a lay-by approximately 100 m from the runway saw the aircraft making its approach then trying to climb. He thought he saw the left wing hit the trees. He saw the aircraft spin round to its right and descend into the field, and alerted the emergency services in a call timed at 1350 hrs.

Both occupants sustained serious injuries.

### **Accident site**

Figure 1 shows the aircraft after the accident, facing in the opposite direction to its flightpath before impact. The runway can be seen in the distance with the trees the aircraft collided with shown in the right of the image.

The police who attended the scene reported there were ground impact marks approximately 10 m from where the aircraft came to rest.

## Aerodrome information



**Figure 2**

Aerial View of Lower Upham Airfield (runway highlighted with a white line)

The grass runway at Lower Upham is approximately 550 m long and is 560 ft above mean sea level (Figure 2). The runway is orientated roughly east west and slopes up from the west to the east. The accident location elevation is 80 ft higher than the threshold of the easterly runway.

## Meteorology

The day of the accident was warm. The pilot reported the weather on landing to be a clear and sunny with a surface wind from 090° at 6 kt, visibility 20 km and a temperature of 33°C.

Gloucestershire Airport (approximately 30 nm from the accident site) reported a surface wind from 130° at 3 kt, CAVOK, temperature 33°C and sea level pressure of 1013 hPa.

## Aircraft information

The Jabiru UL-430 is a high-wing two-seat microlight of simple composite construction, fitted with the four-cylinder, four-stroke Jabiru 2200A engine and wooden fixed pitch propeller.

## Aircraft performance

The pilot estimated the aircraft's weight was 407 kg when the accident occurred.

The aircraft's rate of climb and baulked landing performance is assessed during the annual 'Permit to Fly' check flight. The pilot had reported the baulked landing performance was 'satisfactory' on the previous three check flights. Table 1 shows the climb performance reported during these flights.

Year	Temperature (°C)	Airspeed (kt)	Rate of Climb (fpm)
2021	+19	75	895
2020	+18	75	857
2019	+16	70	923

**Table 1**

Rate of Climb recorded during previous check flights

### Density altitude

Density altitude is defined as pressure altitude corrected for nonstandard temperature variations. It gives the altitude in the standard atmosphere equivalent to the conditions on the day.

The density altitude at Lower Upham at 1350 hrs on 13 August would have been 2,720 ft. This means the performance of the aircraft at the airfield would have been equivalent to the performance at 2,720 ft on a standard day.

The FAA has published a safety leaflet<sup>1</sup> which describes the effects of density altitude on takeoff and landing performance and on rate of climb. The chart at the end of the leaflet suggests G-RUFS would have experienced a 25% reduction in climb performance in the conditions on the day of the accident.

### Analysis

The aircraft was not examined by the AAIB so the possibility of an engine problem could not be eliminated but both occupants reported they thought the engine was operating normally.

It is not known exactly where on the runway the go-around was initiated or what airspeed the aircraft was achieving, so it is not possible to calculate the rate of climb that would have been required to clear the trees. However, it is likely that the reduced performance due to the high ambient temperature combined with the rising ground meant the aircraft was not able to climb at a sufficient rate.

The CAA has published Safety Sense Leaflet 12, - '*Strip Flying*', which gives guidance on flying from small airstrips and includes a section about climb performance<sup>2</sup>.

### Conclusion

It is likely that the reduced climb performance due to the high ambient temperature meant the aircraft was unable to climb sufficiently to clear the trees at the end of the runway.

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#### Footnote

<sup>1</sup> FAA Safety Leaflet – '*Density Altitude*' available at <https://www.faasafety.gov/files/gslac/library/documents/2011/Aug/56396/FAA%20P-8740-02%20DensityAltitude%5bhi-res%5d%20branded.pdf> (accessed 27 September 2022).

<sup>2</sup> CAA Safety Sense Leaflet – '*Strip Flying*' available at [https://publicapps.caa.co.uk/docs/33/CAA8230\\_SafetySense\\_12-Strip-Flying.pdf](https://publicapps.caa.co.uk/docs/33/CAA8230_SafetySense_12-Strip-Flying.pdf) (accessed 27 September 2022).