

## Accident

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|--|---|-------------------|
| <b>Aircraft Type and Registration:</b> | Sonaca 200, G-LKDM  |                   |
| <b>No &amp; Type of Engines:</b>       | 1 Rotax 914 F2 piston engine  |                   |
| <b>Year of Manufacture:</b>            | 2022 (Serial no: 056)   |                   |
| <b>Date &amp; Time (UTC):</b>          | 6 August 2025 at 1537 hrs   |                   |
| <b>Location:</b>                       | Blackbushe Airport, Surrey  |                   |
| <b>Type of Flight:</b>                 | Training  |                   |
| <b>Persons on Board:</b>               | Crew - 1  | Passengers - None |
| <b>Injuries:</b>                       | Crew - 1 (Serious)  | Passengers - N/A  |
| <b>Nature of Damage:</b>               | Right wing extensively damaged and canopy shattered. Nose landing gear broken off. Damaged beyond economic repair |                   |
| <b>Commander's Licence:</b>            | Student   |                   |
| <b>Commander's Age:</b>                | 23 years  |                   |
| <b>Commander's Flying Experience:</b>  | 20 hours (of which 20 were on type)<br>Last 90 days - 20 hours<br>Last 28 days - 4 hours                          |                   |
| <b>Information Source:</b>             | Aircraft Accident Report Form submitted by the pilot  |                   |

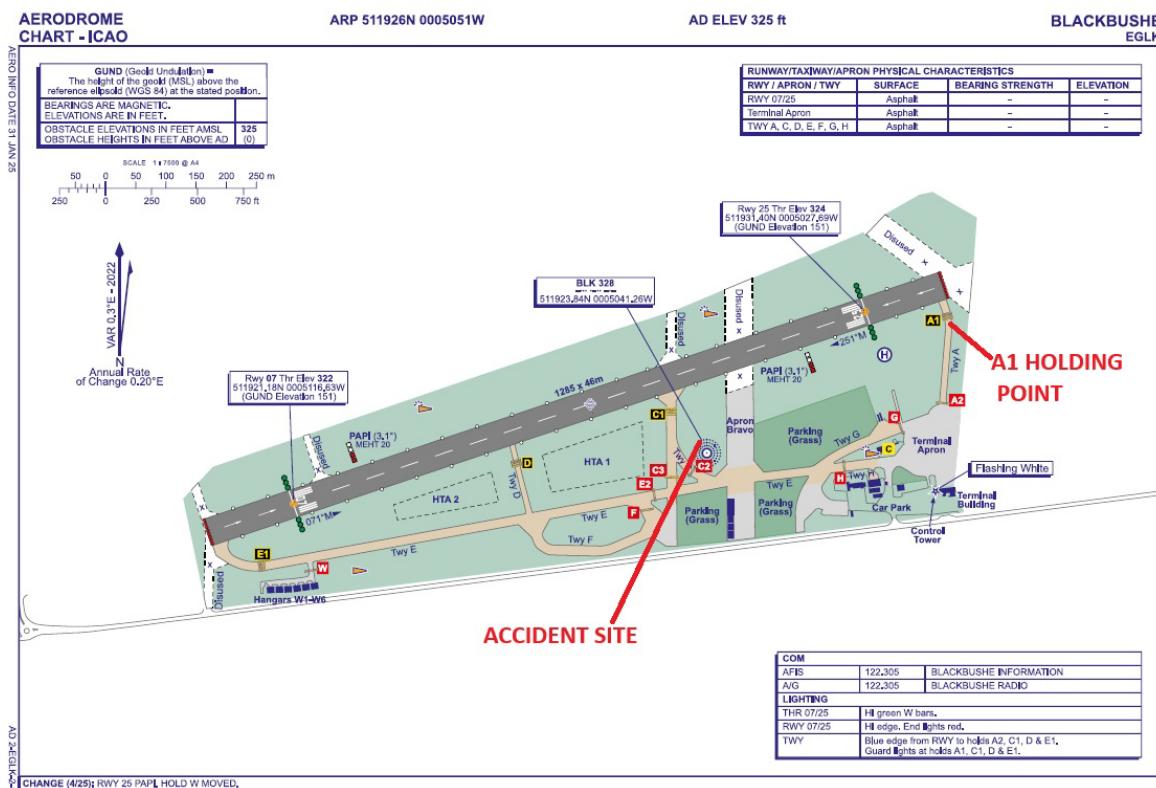
## Synopsis

The aircraft veered left during the takeoff roll and departed the runway. It collided with an antenna on the grass to the left of the runway and was extensively damaged. The solo student pilot on board sustained serious injuries.

## History of the flight

The student had completed a dual circuit consolidation flight with an instructor immediately preceding the accident flight. This was assessed as satisfactory, and the instructor exited the aircraft on the parking area outside the operator's premises. The intention was then for the student to practice circuits solo.

The student made a radio call to Blackbushe Information and taxied toward Runway 25. The engine run-up checks were conducted with no abnormalities observed. The student taxied to holding point A1 for Runway 25 (Figure 1) and made a "ready for departure" RTF call. Blackbushe Information replied that he was clear for takeoff at his discretion. The student lined up on Runway 25, increased the engine rpm to 4,000, checked that the temperatures and pressures were within limits and then released the brakes. As the aircraft began to accelerate the student recalled applying a right rudder input and advancing the throttle to the maximum continuous power setting. The student then stated, "as airspeed became live, throttle advanced to maximum takeoff power and nearing rotational speed (~55 kt), at this point the aircraft veered left. I attempted to apply additional right rudder, which felt stiffer than usual, I cannot comment on its effectiveness."



**Figure 1**  
Blackbushe Airfield Chart

The aircraft exited the runway to the left onto the adjacent grass. The student recalled reducing the throttle to idle and the aircraft undergoing several “bounces”. He applied the brakes but could not recall at what speed or how effective the braking was. As the aircraft travelled across the grass the student saw a large antenna ahead. The student applied right rudder but stated that had no effect. He then applied left rudder which did give a response, but he was unable to avoid the antenna. The right wing struck the antenna and the aircraft rotated around the structure coming to rest after almost 270° of yaw, approximately parallel to Runway 07. The antenna collapsed onto the aircraft shattering the canopy.

Once the aircraft had come to rest the student released his harness and was able to open the canopy. A bystander called out to the student to vacate the aircraft since fuel could be seen leaking out. The student turned off the magnetos, removed the aircraft key, turned off the master switches and then vacated the aircraft over the left wing. His phone detected the crash and initiated an emergency call at 1538 hrs. The student was admitted to hospital and diagnosed with a serious chest injury (manubriosternal dislocation) believed to have resulted from colliding with the aircraft control yoke. He remained in hospital for five days.

### Accident site

The aircraft struck an antenna adjacent to the BLK Non-Directional Beacon (NDB) and came to rest approximately opposite to the intended departure direction (Figure 2).



**Figure 2**  
Overview of accident site

The right wing was severely damaged, the canopy shattered, and the nose landing gear broke off. The extent of the damage is shown in Figure 3.



**Figure 3**  
Aircraft damage

## Aircraft information

The Sonaca 200 is a low-wing cantilever monoplane made from aluminium alloy, it has an enclosed cabin with two side-by-side seats. It is powered by a 115 hp Rotax 914 engine and has a fixed tricycle landing gear. After the accident, the operator examined the aircraft and found all flying controls to be still connected and operating normally. The nosewheel, though its range of movement was limited by the damage, could still be moved in both directions. The wheels, tyres and brakes were all reported to be in good condition.

## Meteorology

The wind at the time of the accident was reported as from 250° at 9 kt. The wind was therefore aligned with the departure runway and so crosswind was not a factor.

## Personnel

The student was very inexperienced with a total of just over 20 flying hours of which less than one hour was as PIC. During the flight with an instructor immediately preceding the accident flight the student flew three circuits. The approaches on those circuits consisted of one go-around, one touch and go landing and one full stop landing with flaps. The instructor stated that the student had '*demonstrated a high level of aircraft control throughout the takeoff, circuit and landing.*' The instructor recalled that the student had a tendency to verbalise their actions, highlighting any required adjustments, throughout each phase of flight. The instructor felt this gave a clear insight into the student's situational awareness and decision-making process.

## Analysis

No technical cause for the aircraft exiting the runway was identified. It is likely therefore that the yaw to the left was induced by the aerodynamic and mechanical characteristics of the aircraft. All propeller aircraft exhibit a tendency to swing to one side on takeoff resulting from the slipstream effect of the propeller and the torque reaction to the propeller's rotation.

A propeller that is rotating in a clockwise direction viewed from behind, as on the Sonaca 200, will impart a rotation to the slipstream in the same sense. This rotation produces an asymmetric flow over the fin and rudder such as to induce an aerodynamic force to the right. This, in turn, will cause the aircraft to yaw to the left.

If the propeller rotates clockwise, viewed from behind, the torque reaction will tend to rotate the aircraft in the opposite sense, ie roll to the left. The rolling motion is prevented by the wheels being in contact with the ground and this results in more weight being supported by the left tyre than the right tyre, which increases the rolling resistance of the left tyre. Consequently, the aircraft will tend to swing to the left until the wings take the weight off the main tyres.

Although the student stated he applied right rudder at the start of the takeoff roll, it appeared that the rudder input did not fully counter the tendency of the aircraft to yaw left. The aircraft was light and would have accelerated rapidly meaning the time interval for the aircraft to

reach the edge of the runway would have been very short. At this point, the student's expectations were breached and it is possible he suffered a startle effect, which might have delayed or impaired the application of appropriate corrective action. With the aircraft travelling at high speed, it is likely it collided with the antenna before the student could respond appropriately.

### **Conclusion**

The aircraft yawed left and exited the runway, most likely as a result of uncorrected slipstream and torque effects. It is possible that the student suffered a startle response which affected his response to the situation. The available evidence suggested insufficient right rudder was applied. The aircraft was damaged beyond economic repair, and the student suffered a serious chest injury.