BEA
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SAFETY INVESTIGATION REPORT

Accident to the ROBIN DR400/120 registered F-GSBN on Friday 14 June 2024 on Chartres - Champhol[1] aerodrome

Time	Around 13:15[2]
Operator	Aéroclub Renault
Type of flight	Cross country
Persons on board	Pilot
Consequences and damage	Pilot slightly injured, aircraft destroyed
This is a courtesy translation by the BEA of the Final Report on the Safety Investigation. As accurate as the translation may be, the original text in French is the work of reference.	

Runway veer-off on increasing power during a touch-and-go, collision with windsock, rupture of LH wing, collision with ground

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on statements made by the pilot and people present at the aerodrome or in flight, data from the SDVFR navigation application and videos from the aerodrome security cameras.

The pilot took off from Chavenay – Villepreux aerodrome at around 12:45 to carry out a cross-country flight and a touch-and-go at Chartres – Champhol aerodrome and then Dreux – Vernouillet aerodrome before returning to Chavenay.

After flying for approximately 20 min, the pilot passed overhead Chartres aerodrome at an altitude of 1,800 ft[3] and then joined the aerodrome circuit at the beginning of the downwind leg at 1,500 ft in order to land on paved runway 27.

According to the SDVFR data, the ground speed during the final approach for runway 27 was between 110 and 130 km/h on a slope of around 3°. The pilot landed on paved runway 27 and reconfigured the aeroplane to take off after the touchdown. He pushed the throttle to obtain full power, retracted the flaps by one detent position and pushed the carburettor heat control.

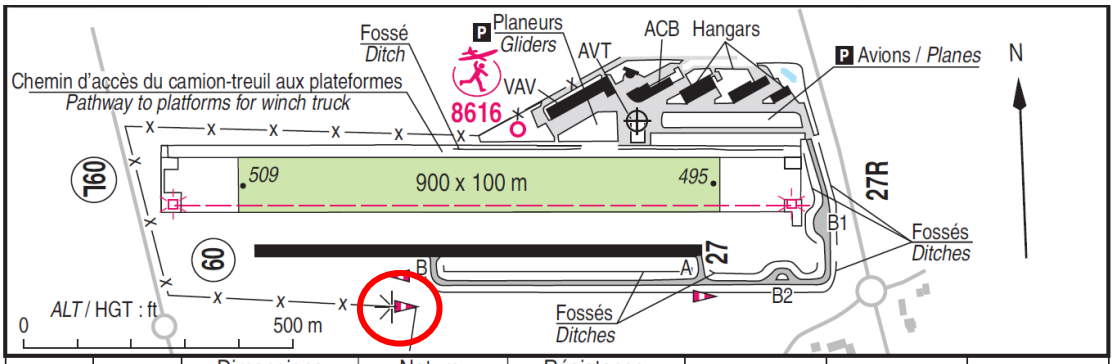
[1] Commonly known as Chartres Métropole.
[2] Except where otherwise indicated, the times in this report are in local time.
[3] The glossary of abbreviations and acronyms frequently used by the BEA can be found on its web site.

The aeroplane yawed to the LH side and exited the runway flying over the grass at very low height. The ground speed was of the order of 90 km/h. Several eyewitnesses saw the aeroplane with a nose-up attitude. It then collided with the windsock situated close to taxiway B. The LH wing of the aeroplane was severed. It came to a stop on its back and the pilot managed to evacuate the aeroplane unaided.

2 ADDITIONAL INFORMATION

2.1 Aerodrome information

Chartres – Champhol (LFOR) aerodrome has an unpaved runway and a paved runway both oriented 09/27.



RWY	QFU	Dimensions *Dimension*	Nature *Surface*	Résistance *Strength*	TODA	ASDA	LDA
09 27	092 272	840 x 25	Revêtue *Paved*	5.7 t	840 840	840 840	840 840
09L 27R	092 272	900 x 100	Non revêtue *Unpaved*	-	900 900	900 900	900 900

Aides lumineuses :
RWY 09/27 revêtue BI feux autonomes.
PCL : voir TXT 01.

Lighting aids :
Paved RWY 09/27 : LIL autonomous lights.
PCL : see TXT 01.

Figure 1: information concerning runways at Chartres aerodrome with location of accident shown by a red circle (source: SIA)

2.2 Examination of site and wreckage

The main part of the wreckage was situated a few dozen metres from the windsock. The aeroplane was very damaged and lying on its back. Part of the LH wing had been torn off and was embedded in the windsock.

Figure 2: accident site (source: GTA)

The BEA did not go to the accident site but it did examine the wreckage a few days later. The results of the examination showed that the flight controls were continuous at the time of the accident, that the flaps were in the 1st detent position (take-off) and that the elevator trim was close to neutral.

The eyewitnesses on the ground indicated that they did not see any run marks in the grass made by the aeroplane, around the area of the runway excursion and windsock which seems to be confirmed by the photos.

2.3 Meteorological information

Météo-France indicated that between 13:00 and 14:00, the Chartres sector was situated at the rear of a cold front giving light rain and at the front of the most active part of the rear of the depression which followed. The Île-de-France sector thus experienced gusts peaking at 25 kt.

Data from the Chartres aerodrome weather station, although not providing METARs, indicated that between 13:00 and 14:00, the wind was from the south-south-west (200-230°) at a speed of around 12 kt with peaks of up to 25 kt (46 km/h), visibility was greater than 20 km, few clouds were present around 3,300 ft and a broken layer of clouds began at around 6,000 ft, the temperature was between 18 and 20°C and the QNH was 1008 hPa.

The crosswind component for landing on QFU 272° with a wind from 200°, between 12 and 25 kt, was 10 to 23 kt.

2.4 Aircraft information

The DR400/120 registered F-GSBN was equipped with a 120-hp Lycoming O-235-L2A four-cylinder engine. The last maintenance inspection dated back to 10 and 11 June 2024 and consisted of the scheduled 50-hour inspection. The aeroplane had carried out four flights since this inspection and before the accident flight.

The flight manual indicates the following procedure for landing in a crosswind or with strong gusts:

Flaps	Take-off position (1st detent)
Approach speed	130 km/h + ½ value of gust
Drift	Compensate for in conventional manner
Demonstrated crosswind	40 km/h (22 kt)

The normal take-off speed indicated in the flight manual with the flaps in the first detent position is 100 km/h.

Touch-and-go landings are not mentioned in the flight manual. The VFR instructor manual produced by the ENAC indicates that, while frequently used in instruction to optimize flight time when the runway length is compatible, "touch and go" landings do not exist as an air operation. The approach is normally concluded by a landing or a missed approach.

When carrying out a "touch and go" in instruction, the manual recommends that if the runway is long enough, and with the agreement of the control, to make a full stop landing and ask the student to reconfigure the aeroplane for a new take-off, or ask the student to carry out the run, with the instructor configuring the aircraft for a new take-off. In this case, the aeroplane should first be reconfigured (flaps and carburettor heat) and then power applied so that the pilot can look outside to control the flight path during the acceleration.

Engine effects

The spiralling slipstream created by the propeller when increasing the engine's power generates roll and yaw moments. On a DR400 with a propeller rotating in a clockwise direction as seen from the pilot's position, the spiralling slipstream generates roll and yaw moments to the LH side. This phenomenon is all the more intense when the speed is low and the engine rating high. To keep the aircraft on course, the pilot must counter this effect by pressing the RH rudder pedal.

This phenomenon may be exacerbated by a LH crosswind and the resulting weathervane effect on the aeroplane's vertical stabilizer, which tends to move into the direction of the wind.

2.5 Pilot's experience and statement

The 37-year-old pilot had obtained his aeroplane Private Pilot Licence (PPL(A)) in July 2022. He had logged approximately 130 flight hours, all of which on the DR400. His recent experience before the accident flight was as follows:

Experience	Previous 24 h	Previous 72 h	In the last 30 days	In the last 90 days
Flight Hours	1 h 18 min	2 h 01 min	2 h 46 min	4 h 21 min

The morning of the day of the accident, the pilot carried out 12 runway circuits on unpaved runway 23 at Chavenay – Villepreux. He indicated that the wind was on the axis with gusts of up to 20 kt. After eating and replenishing the fuel tanks, he started his triangular flight. The flight was uneventful until landing on Chartres aerodrome.

The pilot explained that he clearly remembered having carried out his final approach on the correct slope, at 130 km/h with the flaps in the second detent position, the electric pump and carburettor heat engaged and then touching down on the runway. He explained that the sequence after this was not as clear but that he remembered that, in the following order, he pushed the stick forward to release the nose wheel, increased power, reconfigured the aeroplane for take-off and pushed the carburettor heat control. He specified that he did not particularly make foot inputs on the pedals when increasing power.

The pilot indicated that he then felt the aeroplane suddenly yaw to the LH side with a slight roll. He could not say whether he was in the take-off run or flying at very low height. He explained that everything happened very quickly and that he tried to straighten up the aeroplane with stick and pedal inputs to return to the runway axis but that he was powerless. He specified that he made small pedal and stick inputs without marked corrections because he was worried about turning over. He indicated that there was no problem with the flight controls or engine and that he did not hear the stall warning sound. He saw the windsock pylon and tried to avoid it, in vain.

The pilot indicated that he had correctly fastened his three-point seatbelt which probably saved him from more serious injuries.

3 CONCLUSIONS

The conclusions are solely based on the information which came to the knowledge of the BEA during the investigation.

Scenario

The pilot carried out a landing with a LH crosswind and gusts during a touch-and-go on paved runway 27 at Chartres – Champhol aerodrome. After touching down, increasing power to take off again and reconfiguring the aeroplane, the aircraft veered off the LH side of the runway, flying over the ground at a very low height. The pilot probably did not make sufficient corrections on the pedals and stick to hold the aeroplane's landing path on the runway centreline.

The aeroplane continued its course on a diverging path to the runway axis at a speed close to the take-off speed. Several eyewitnesses saw the aeroplane fly over the grass with a nose-up attitude.

The aeroplane struck the windsock close to taxiway B. The pilot, whose seatbelt was fastened, was able to exit the aircraft without too much difficulty and uninjured.

Contributing factors

The pilot's inadequate management of the power increase actions may have contributed to the aeroplane's lateral excursion from the runway:

- order of actions during touchdown with power being increased before reconfiguring the aeroplane;
- insufficient inputs on the pedals to counter both the engine effects on increasing power and the weathervane effect of the crosswind, possibly exacerbated by a gust close to the aeroplane's demonstrated limit.

Safety lessons

Carrying out a touch-and-go when not in an instruction situation may be generally downplayed by pilots, without having received any prior information or instructions from their instructors.

A risk management approach such as Threat and Error Management (TEM), taking into account both external conditions (aerology, runway length, runway surface and condition, etc.) and those specific to the pilot (total experience, recent experience, knowledge of the aerodrome, fitness and state of mind, etc.), can be a good practice for deciding whether or not to carry out a touch-and-go outside instruction.

The Fédération Française Aéronautique (FFA) informed the BEA that it was going to work on a bulletin on this subject.

The BEA investigations are conducted with the sole objective of improving aviation safety and are not intended to apportion blame or liabilities.