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## Report ULM A-007/2019

Accident involving a Storm  
Century 04 aircraft, registration  
EC-ZTV, in the vicinity of the  
Casarrubios del Monte aerodrom  
(Toledo) on 30 April 2019



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## **Notice**

This report is a technical document that reflects the point of view of the Civil Aviation Accident and Incident Investigation Commission (CIAIAC) regarding the circumstances of the accident object of the investigation, and its probable causes and consequences.

In accordance with the provisions in Article 5.4.1 of Annex 13 of the International Civil Aviation Convention; and with articles 5.5 of Regulation (UE) n° 996/2010, of the European Parliament and the Council, of 20 October 2010; Article 15 of Law 21/2003 on Air Safety and articles 1., 4. and 21.2 of Regulation 389/1998, this investigation is exclusively of a technical nature, and its objective is the prevention of future civil aviation accidents and incidents by issuing, if necessary, safety recommendations to prevent from their reoccurrence. The investigation is not pointed to establish blame or liability whatsoever, and it's not prejudging the possible decision taken by the judicial authorities. Therefore, and according to above norms and regulations, the investigation was carried out using procedures not necessarily subject to the guarantees and rights usually used for the evidences in a judicial process.

Consequently, any use of this report for purposes other than that of preventing future accidents may lead to erroneous conclusions or interpretations.

This report was originally issued in Spanish. This English translation is provided for information purposes only.

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## Abbreviations

° ' "	Sexagesimal degrees, minutes and seconds
°C	Degrees centigrade
AEMET	National Weather Agency
AESA	National Aviation Safety Agency
ft	Feet
h	Hours
HP	Horsepower
Km/h	Kilometers per hour
LAPL	Light aircraft pilot license
LT	Local time
m	Meters
mm	Millimeters
MAF	Multi-axis fixed wing
METAR	Meteorological aerodrome report
min	Minutes
N	North
seg	Seconds
TULM	Ultralight pilot license
UTC	Coordinated universal time
VNE	Never exceed speed
W	West

## **Synopsis**

Operator:	Private
Aircraft:	STORM CENTURY 04, EC-ZTV
Date and time of accident:	Tuesday, 30 April 2019 at 09:50 LT <sup>1</sup>
Site of accident:	Vicinity of the Casarrubios del Mont aerodrome, Toledo
Persons on board:	1 pilot and 1 passenger, uninjured
Type of flight:	General Aviation - Private
Phase of flight:	Maneuvering - emergency descent
Date of approval:	29 April 2020

### **Summary of the accident**

On Tuesday, 30 April 2019, a STORM CENTURY 04 aircraft, registration EC-ZTV, suffered an accident while performing various flight maneuvers in the vicinity of the Casarrubios del Monte aerodrome (Toledo). In addition to the pilot, there was a passenger on board with extensive flying experience.

Over the course of the second touch and go maneuver that was being performed, during the climb phase, the aircraft experienced a loss of engine power that caused the pilot to decide to make an emergency off-field landing.

The aircraft landed in a crop field and after traveling some 40 m, came to a stop in an adjacent field with soft ground, which caused the aircraft's landing gear to collapse and the aircraft to stop completely.

The occupants were not injured but the aircraft sustained significant damage to its landing gear and bottom front fuselage.

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<sup>1</sup> Unless otherwise specified, all times in this report are local, which, on the date of the accident, was equal to UTC +2 hours.

## 1. FACTUAL INFORMATION

### 1.1. History of the flight

On 30 April 2019, at 09:05, a Storm Century aircraft, registration EC-ZTV, took off from runway 26 at the Casarrubios del Monte aerodrome with two occupants on board, the pilot and a passenger.

The purpose of the flight was to acquaint the pilot with the aircraft, since he had not flown in a long time. To help with this task, he had recruited a more experienced pilot to fly as a passenger.

Approximately 35 minutes into the flight, while doing maneuvers south of the airfield without any problems, they proceeded to perform touch and go landings.

After two such landings, during the climb phase after the second touch and go, at 350 ft AGL, the propeller vibrated violently and the engine lost all power.

The more experienced pilot immediately took control, turned left and prepared to make an emergency landing in a cultivated crop field with firm ground, which he had in sight.

The aircraft landed practically parallel to the direction of the field and traveled some 40 m on the ground, constantly veering left during much of the landing run, until the landing gear eventually collapsed, causing the aircraft to stop in an adjacent field.

The pilot and passenger were uninjured but the aircraft sustained significant damage.

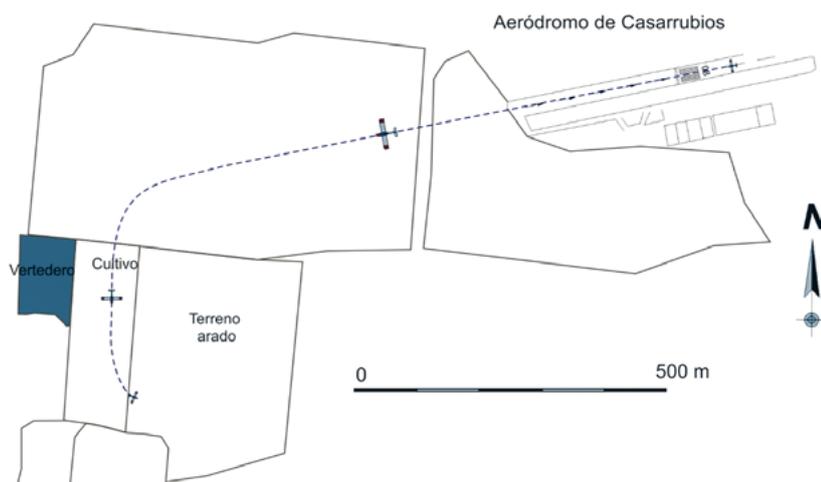


Figure 1: Path of the aircraft

## 1.2. Injuries to persons

Injuries	Crew	Passengers	Total in the aircraft	Other
Fatal				
Serious				
Minor				
None	1	1	2	
<b>TOTAL</b>	1	1	2	

## 1.3. Damage to aircraft

The aircraft sustained heavy damage to its engine, propeller, landing gear and part of the fuselage.

## 1.4. Other damage

None.

## 1.5. Personnel information

The pilot, a 59-year-old French national, had an Ultralight Pilot License (TULM) with a multi-axis fixed-wing (MAF) rating issued by Spain's National Aviation Safety Agency (AESA), which was valid until 31 August 2019.

He also had the relevant LAPL medical certificate, which was valid until 20 December 2019.

According to the information provided by the pilot, he had a total of 97 h 35 min of flight time, of which 46 h 15 min had been on the type. He had not flown since 18 August 2018.

## 1.6. Aircraft information

The aircraft, a two-seater, amateur-built STORM CENTURY 04 aircraft, registration EC-ZTV, manufactured in 2006 with serial number 05087-2093, was outfitted with a 100-HP, ROTAX 912 ULS engine, and a variable-pitch Woodcomp propeller with three fiberglass blades. Its never exceed speed (VNE) is 310 km/h.

At the time of the accident, the aircraft had 909 flight hours.

According to information provided by the pilot, on 12 January 2019, when the aircraft had 869 flight hours, it underwent a 50-h inspection. The Aircraft Manual describes this inspection as involving an overhaul of the engine, engine mount and external components, check of the propeller gearbox, oil and filter change, check of the air filter and carburetors.

The aircraft had an ultralight certificate of airworthiness issued by AESA that was valid until May 2020.

### **1.7. Meteorological information**

According to information provided by Spain's National Weather Agency (AEMET), there were no clouds or precipitation in the accident area.

AEMET does not have weather stations at the Casarrubios del Monte aerodrome, the nearest ones being at the Cuatro Vientos Airport and the Getafe Air Base, which are 27 km northeast and east-northeast, respectively.

The METAR reports for said aerodromes were as follows:

METAR LEVS 300730Z VRB02KT CAVOK 17/08 Q1018=

METAR LEVS 300800Z 06004KT 010V110 CAVOK 17/07 Q1018=

METAR LEGT 300700Z 10004KT 070V140 CAVOK 15/09 Q1018=

METAR LEGT 300800Z 09005KT 060V120 CAVOK 17/09 Q1018=

These reports indicate that there was little wind, good visibility with no significant clouds, a temperature of around 17° C and low humidity.

### **1.8. Aids to navigation**

Not applicable.

### **1.9. Communications**

There were no communications or emergency messages.

### **1.10. Aerodrome information**

Not applicable.

### 1.11. Flight recorders

Not applicable.

### 1.12. Wreckage and impact information

The aircraft wreckage was located in a crop field 1050 m southwest of the runway 08 threshold at the Casarrubios del Monte aerodrome, at coordinates 40° 13.781' N 04° 02.384' W.

All the components were contained to a small debris field.

The damage to the aircraft consisted of fractures and deformations to the front underside of the fuselage, the landing gear, engine and cockpit interior. All three propeller blades were also broken.

Both tanks were verified to contain fuel.

The aircraft came to a stop in a field adjacent to where it had landed. Its ground was plowed and soft, in contrast to the cultivated, firm ground of the landing field.



Figure 2: Wreckage of the accident aircraft

There were marks on the ground that indicated where the landing gear had made contact and the path traveled by the aircraft. The first marks were 11.50 m long and separated by 2 m. These were followed by a third mark, equidistant from the first marks. These three tracks were an additional 28 m long and continued to the point where the aircraft had stopped, at the start of the adjacent field.

The first set of marks was straight and almost aligned with the direction of the field. The second set, made after the nose wheel made contact with the ground, curved continuously to the left.

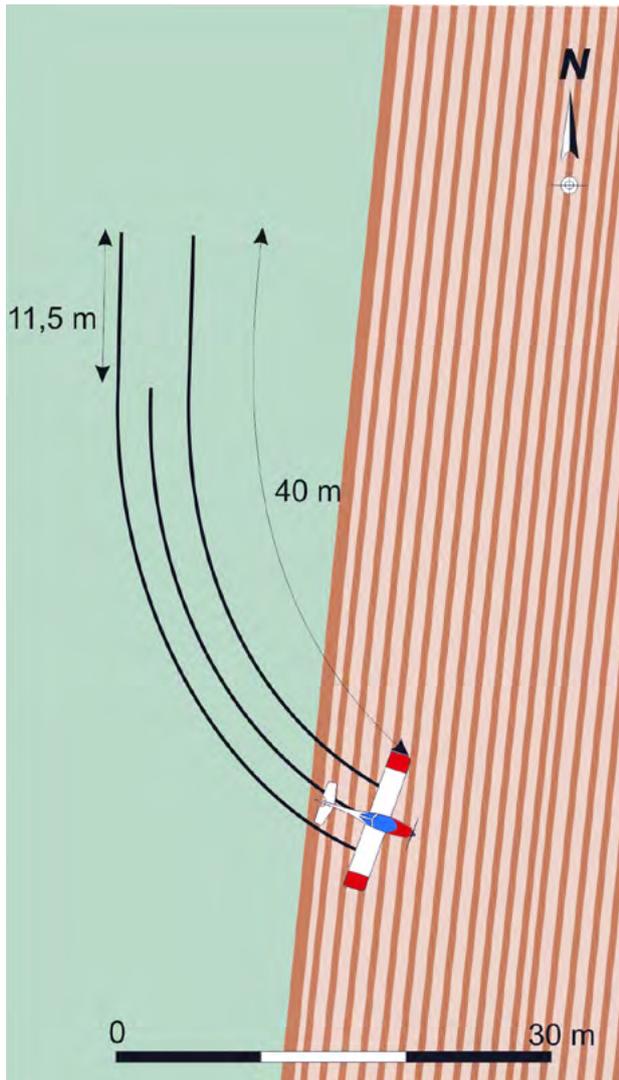


Figure 3: Marks on the ground

### **1.13. Medical and pathological information**

N/A.

#### **1.14. Fire**

No signs were found of a fire during the flight or after the impact.

#### **1.15. Survival aspects**

Both occupants exited the aircraft under their own power.

#### **1.16. Tests and research**

##### *1.16.1 Inspection of the engine*

The engine was inspected after the accident, which yielded the following findings:

Good general appearance of the engine.

No water particles were found in the tanks and there was no dirt in the carburetor trays.

The gascolator was clean.

The clutch had been overloaded.

On the propeller side, the crankshaft was deflected by 0.10 mm, with the maximum allowable being 0.08 mm. It is not known if this eccentricity was caused by the impact. The chip detector had two small chips from an engine seizure.

The oil filter contained metal shavings.

The air filters were covered in dirt, which blocked the air intake.

#### **1.17. Organizational and management information**

#### **1.18. Additional information**

Not applicable.

#### **1.19. Useful or effective investigation techniques**

Not applicable.

## **2. ANALYSIS**

### **2.1. General**

The pilot had the flight license and medical certificate required for the flight.

The aircraft had the documentation necessary for the flight.

### **2.2. Meteorology**

The data recorded at various weather stations in the area indicate that the flight was not limited by the weather conditions.

### **2.3. Of the operation**

According to the pilot's statement, he decided to land on a crop field that was within view to his left. Given the characteristics of the field, the decision was correct.

An analysis of the tracks found indicate that they were made when the landing gear wheels made contact with and then traveled along the ground. The first 11.5 m of the marks were left by the main gear, and the remaining 28 m with all three landing gear legs.

As a result, the investigators determined that the landing was executed correctly, touching down first with the main gear and dropping the nose gear a few meters later.

The aircraft came to a stop at the start of a plowed field that was adjacent to the one used to land. Its landing gear had been broken after the aircraft entered the adjacent field, where the terrain was too soft to continue supporting the aircraft's motion.

The aircraft's path on the ground was initially in a straight line, although it then curved constantly to the left for much of the landing run. This caused the aircraft to stop in an adjacent field, where the ground was too soft to allow the aircraft to continue traveling.

### **2.4. Of the condition of the engine**

The abnormalities detected during the detailed inspection of the engine, such as the presence of two small shavings in the chip detector indicative of a seized engine, and the metal shavings in the oil filter, suggested that the engine had not been properly maintained.

The air filters were also completely covered in dirt, with prevented the proper intake of air. This finding by itself is enough to account for the loss of engine power.

### **3. CONCLUSIONS**

#### **3.1. Findings**

The pilot had the flight license and medical certificate required for the flight.

The aircraft had the documentation necessary for the flight.

The flight was not limited by the weather conditions.

The decisions made were correct.

The aircraft's path once on the ground was not adequate.

The engine was not in proper condition for the flight.

#### **3.2. Causes/Contributing factors**

The accident was caused by the execution of an emergency, off-field landing in an unprepared field due to the in-flight stoppage of the engine.

**4. SAFETY RECOMMENDATIONS**