

# CIAIAC

COMISIÓN DE  
INVESTIGACIÓN  
DE ACCIDENTES  
E INCIDENTES DE  
AVIACIÓN CIVIL

## Report A-018/2018

Accident involving a Socata Rallye  
235 E aircraft, registration EC-CYO, in  
the vicinity of the aerodrome of  
Fuentemilanos (Segovia) on 15 May  
2018.



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DE ESPAÑA

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SUBSECRETARÍA

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DE ACCIDENTES E INCIDENTES  
DE AVIACIÓN CIVIL

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## **Foreword**

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**

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|       |                                      |
|-------|--------------------------------------|
| °     | Sexagesimal degrees                  |
| ° C   | Degrees centigrade                   |
| AEMET | National Weather Agency              |
| AESA  | National Aviation Safety Agency      |
| CPL   | Commercial pilot license             |
| ft    | Feet                                 |
| h     | Hours                                |
| HP    | Horsepower                           |
| hPa   | Hectopascals                         |
| Kg    | Kilograms                            |
| Km    | Kilometers                           |
| Km/h  | Kilometers per hour                  |
| LEFM  | Aerodrome of Fuentemilanos (Segovia) |
| m     | Meters                               |
| mm    | Millimeters                          |
| STR   | Sailplane towing rating              |
| UTC   | Coordinated universal time           |
| VFR   | Visual flight rules                  |

**Synopsis**

|                            |  |
|----------------------------|--|
| Operator:                  | Aeronáutica del Guadarrama, S.L.                     |
| Aircraft:                  | Socata Rallye 235 E, registration EC-CYO             |
| Date and time of accident: | 15 May 2018 at 16:00 UTC <sup>1</sup>                |
| Site of accident:          | Vicinity of the aerodrome of Fuentemilanos (Segovia) |
| Persons on board:          | 1, uninjured   |
| Type of flight:            | Aerial Work – Commercial - Towing                    |
| Flight rules:              | VFR  |
| Date of approval:          | 30 January 2019                                      |
| Phase of flight:           | En route-Normal descent                              |
| Date of approval:          |  |

**Summary of event:**

On Tuesday, 15 May 2018, a Socata Rallye 235 E aircraft, registration EC-CYO, experienced a birdstrike in flight while conducting a flight to tow a glider in the vicinity of the aerodrome of Fuentemilanos (Segovia).

After towing and releasing the glider, and while the aircraft was on the return leg, descending to the aerodrome, its left wing impacted a vulture, which caused significant damage with a partial loss of maneuverability.

After the impact, the aircraft continued flying and managed to land at the destination aerodrome. The pilot was not injured. The aircraft's left wing was heavily damaged.

The investigation has concluded that the accident was caused when the aircraft's left wing impacted a vulture in flight.

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<sup>1</sup> All times in this report are in UTC, unless otherwise specified. On the date of the accident, local time was equal to UTC + 2 hours.

## 1. FACTUAL INFORMATION

### 1.1. History of the flight

On Tuesday, 15 May 2018, a Socata Rallye 235 E aircraft, registration EC-CYO, took off from runway 34 at the aerodrome of Fuentemilanos to make its third flight of the day. The pilot was the sole occupant. The purpose of this flight was the same as that of the two previous flights, to tow a glider.

Initially it climbed to 150 m on the runway heading before making a 360° turn over the runway to gain altitude and fly due east to Segovia.

Approximately 1.5 km before reaching Segovia, the aircraft reached an altitude of 850 m and proceeded to release the glider.

The glider turned slightly to the right and the tow airplane, descending slightly, turned left practically 180° to head west toward the aerodrome.

About 2.5 km after the release point, at an altitude of 850 m, the aircraft's left wing impacted a vulture. According to the pilot's statement, at the time the aircraft's wings were level and its flight path was slightly downward.

The first consequence of the impact was a sharp left yaw, which the pilot was able to offset by banking and yawing in the opposite direction.

The aircraft continued to descend. The power was kept at a minimum of 30%.

After the impact, the pilot reported the situation to the flight manager at the Fuentemilanos airfield and, after verifying that the aircraft was controllable, informed him that he would land at a high speed, 250 km/h, instead of the normal 130 km/h, since he could not lower the speed as this would seriously compromise the aircraft's maneuverability.

The flight manager informed him that he would keep the runway clear.

The pilot placed the aircraft in a clean configuration until it was 1 m above the runway, at which point, after closing the throttle, he landed without problem.

The occupant was not injured, but the aircraft's left wing was heavily damaged.



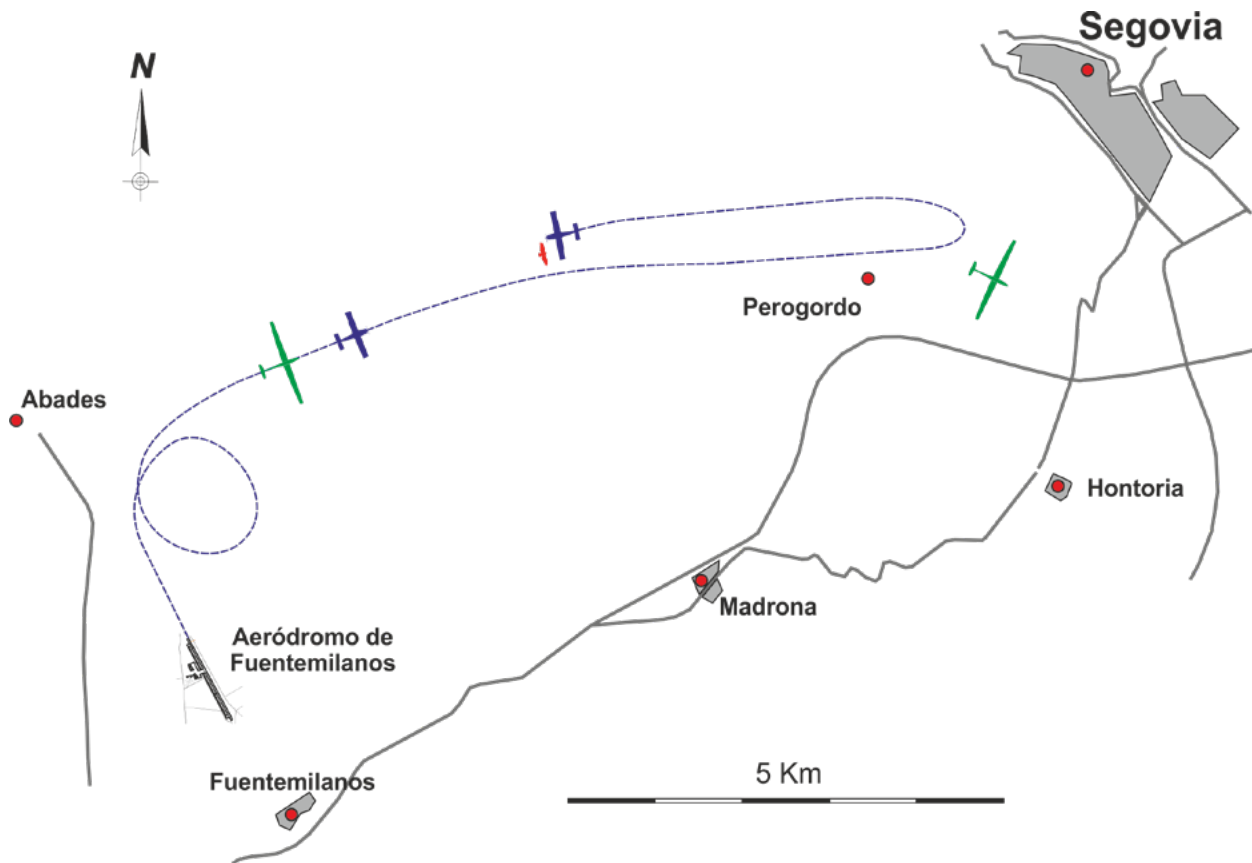


Figure 1. Aircraft's flight path

### 1.2. Injuries to persons

| Injuries     | Crew     | Passengers | Total in the aircraft | Others |
|--------------|----------|------------|-----------------------|--------|
| Fatal        |          |            |                       |        |
| Serious      |          |            |                       |        |
| Minor        |          |            |                       |        |
| None         | 1        |            | 1                     |        |
| <b>TOTAL</b> | <b>1</b> |            | <b>1</b>              |        |

### 1.3. Damage to aircraft

Much of the aircraft's left wing was damaged, particularly the flaps/slats.

#### **1.4. Other damage**

Not applicable.

#### **1.5. Personnel information**

##### **1.5.1 Pilot**

The pilot, a 48-year-old Spanish national, had a commercial pilot license (CPL) issued by Spain's National Aviation Safety Agency (AESA) with a sailplane towing rating (STR) that was valid until 31 July 2018. He also had a class-1 medical certificate that was valid until 13 July 2018.

He had a total of 1138:53 flight hours, 950 of which had been on the type.

#### **1.6. Aircraft information**

##### **1.6.1 General information**

The aircraft was a SOCATA Rallye 235 E, with a maximum takeoff weight of 1200 kg. The accident aircraft had serial number 12801 and was manufactured in 1976. It was registered with AESA on 11 January 2008. It was outfitted with a LYCOMING O-540-B4B5 235-HP engine that had 1348:26 hours.

It had a certificate of airworthiness issued on 18 July 2013 by the National Aviation Safety Agency (AESA), and the corresponding airworthiness review extension, issued by AERONÁUTICA DEL GUADARRAMA as an approved organization with reference ES-MG.137, which was valid until 14 July 2018.

The aircraft had an insurance policy that was valid until 14 October 2018.

The aircraft had 3332:27 flight hours when it underwent a scheduled 100-h inspection on 21 April 2018. This inspection involved a check of both the engine and propeller. The applicable directives pertaining to corrosion, the horizontal and vertical stabilizers and the nose leg were reviewed. The slats were also inspected and worn components were checked and replaced. Tears and cracks on various reinforcing strips for the housings located on both wings to actuate the arms on the slats were repaired.

On the date of the accident, the aircraft had 3342:27 flight hours.

### **1.7. Meteorological information**

According to Spain's National Weather Agency (AEMET), at the time of the accident there were few or no clouds in the area of the accident and temperatures were rising.

The closest AEMET weather stations to the accident site are in Segovia, San Rafael and Migueláñez, located 13 km northeast, 20 km south-southwest and 28 km north-northwest, respectively.

The data they recorded were as follows:

Segovia: Temperature of 15° C, relative humidity of 39%, average wind speed of 8 km/h from the northwest, gusting to 19 km/h, also from the northwest. Pressure of 905 hPa.

San Rafael (temperature and rainfall station): Temperature of 13° C, relative humidity of 52%.

Migueláñez: Temperature of 16° C, relative humidity of 38%, average wind speed of 13 km/h from the north, gusting to 25 km/h.

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

Not applicable.

### **1.9. Communications**

Not applicable

### **1.10. Aerodrome information**

The aerodrome of Fuentemilanos (LEFM) is a private aerodrome that is located in the vicinity of the town of Fuentemilanos, in the province of Segovia.

It has one fully-paved runway in a 16/34 orientation that is 1100 m long and 30 m wide. It also has an adjacent dirt runway of the same length. The aerodrome is at an elevation of 3,281 ft.

### **1.11. Flight recorders**

Not applicable.

## 1.12. Wreckage and impact information

During the return flight to the aerodrome, the leading edge on the inboard third of the aircraft's left wing impacted a vulture.



Figure 2. Deformation of the leading edge<sup>2</sup>



Figure 3. View from the bottom

As a result of the birdstrike, the aircraft sustained significant damage to both the structure and the leading edge slats on the left wing.

This damage indicates that the vulture impacted the top of the slats, deforming them and then, as a consequence of the strong impact, the structure was also deformed.

The nature of the damage is consistent with a slightly downward flight path by the vulture with respect to the aircraft's flight path.



Figure 4. Deformación del slat

<sup>2</sup> The slats were removed once the aircraft was on the ground.

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

Not applicable.

### **1.14. Fire**

There was no fire.

### **1.15. Survival aspects**

Not applicable.

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

#### ***1.16.1. Interview with the pilot***

Investigators were able to obtain a statement from the pilot.

In his account, he stated that after releasing the glider near the city of Segovia at an altitude of 850 m, he proceeded to return to the aerodrome.

Over the course of the return flight, with the aircraft descending slightly, it impacted a vulture with its left wing. As a result of this, he recalled the aircraft *“yawed sharply to the left, which I was able to offset with the rudder (bank) and opposite (right) yaw.”* He stated that *“the aircraft lost some maneuverability, such that I couldn’t reduce the speed, as I initially intended to do, since if I did the aircraft would yaw more to the left.”*

After reporting the situation to the flight manager and verifying that the aircraft was controllable, he informed him that he was *“going to land at a higher speed than normal (250 km/h instead of 130 km/h), with the airplane clean and try to set it 1 m over the runway and at that point cut the throttle and land without problems.”* The flight manager told him that he would keep the runway clear.

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

Not applicable.

## **1.18. Additional information**

### **1.18.1. Information on typical vulture movements in the area**

There are zones within the service area of the aerodrome of Fuentemilanos where it is common to find vultures, and users of the aerodrome are not surprised by their presence.

Year-round, except for winter, on a day with good weather, these birds start appearing at low altitudes, between 100 and 600 m above ground level, due to the low convective activity in the morning.

At these hours, they always fly northwest, toward the plains of Castilla, in search of food.

Toward mid-day, as the amount of convection increases, and with it the height reached by thermals, the number of vultures sighted is much lower than early in the morning, since they are more scattered both vertically and horizontally in the air.

Groups of vultures, typically pairs, can be sighted throughout the day over a wide range of the Castilian plateau, gathered in the thermals, often in groups of up to 40 or 50.

As evening approaches, the morning pattern is reversed as the vultures return to their nests in the Guadarrama mountains, but since the evening is the peak time for convective activity, they are more scattered vertically.

This daily pattern is only disturbed if the thermal activity is low or very low, and is absent on rainy days.

On windy days, vultures tend to fly lower than usual since the wind gradient aloft makes their ground speed much lower, so they try to fly as low as possible since the wind effect is minimized at low altitudes.

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

Not applicable.

## **2. ANALYSIS**

### **2.1. General**

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

The pilot had extensive flying experience and was familiar with the area.

It is common for vultures to be present and flying in the service area of the aerodrome of Fuentemilanos.

The aircraft had the documentation required for the flight.

### **2.2. Of the weather conditions**

The data recorded at the various weather stations in the area show that the weather conditions were not limiting for the flight.

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

According to the pilot's statement, after impacting the vulture, the aircraft lost some maneuverability; in fact, after correcting the immediate left yaw that resulted from the birdstrike, he initially planned to reduce speed but he realized right away that this was not possible, since the aircraft yawed sharply to the left whenever the speed fell.

The pilot then decided to fly at high speeds, which would allow him some degree of control over the aircraft's maneuverability. He maintained this condition until he was just a few centimeters above the runway, when he was able to cut the throttle and land safely, despite the high speed.

After touching down, he completed the landing normally.

In light of the outcome, the decisions made and the way they were executed are deemed to have been correct.

### **3. CONCLUSIONS**

#### **3.1. Findings**

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

The pilot had extensive flying experience and was familiar with the area.

The decisions were made and executed correctly.

The aircraft had the documentation required for the flight.

Weather conditions were not limiting for the flight.

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

The accident was caused when the aircraft's left wing impacted a vulture.



#### **4. SAFETY RECOMMENDATIONS**

No safety recommendations are made.