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## Report A-016/2019

Accident involving a Diamond Aircraft DA 40 D aircraft, registration G-RKAH, in the vicinity of the Huesca Airport (LEHC) on 10 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**

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°	Sexagesimal degrees
°C	Degrees centigrade
AEMET	Spain's National Weather Agency
AENA	Aeropuertos y Navegación Aérea
AESA	National Aviation Safety Agency
AFIS	Aerodrome flight information service
AIP	Aeronautical publication information
CAA	Civil Aviation Authority
CPL	Commercial Pilot License
HP	Horsepower
FAA	Federal Aviation Administration
ft	Feet
h	Hours
hPa	Hectopascals
Kg	Kilograms
Km	Kilometers
Km/h	Kilometers per hour
kt	Knots
LEHC	Huesca airport
LT	Local time
m	Meters
METAR	Meteorological Aerodrome Report
QNH	Altimeter subscale setting to obtain elevation when on the ground
SEO	Spanish Ornithological Society
UK	United Kingdom
UTC	Coordinated Universal Time
VFR	Visual Flight Rules

**Synopsis**

Operator:	Airways Aviation
Aircraft:	Diamond Aircraft DA 40 D, registration G-RKAH
Date and time of accident:	10 April 2019 at 13:15 LT <sup>1</sup>
Site of accident:	Vicinity of Huesca Airport (LEHC)
Persons on board:	2, uninjured
Type of flight:	General aviation - Flight training - Dual
Flight rules:	VFR
Phase of flight:	Maneuvering - Other
Date of approval:	26 February 2020

**Summary of event**

On Wednesday, 10 April 2019, a DIAMOND DA 40 D aircraft, registration G-RKAH, struck a bird while performing a training maneuver in the vicinity of the town of Huerto (Huesca).

A student and instructor were on board during the training flight, which included simulating off-field emergency landings. After simulating one such landing, and once the aircraft was in the climb phase following the maneuver, a vulture impacted the nose of the aircraft, making a large hole but not affecting the aircraft's maneuverability. After the impact, the aircraft headed for the airport, which it reached without problem.

The occupants were uninjured, but the front left part of the aircraft sustained significant damage.

The investigation has concluded that the accident resulted from a head-on collision between a vulture and the aircraft.

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

## 1. FACTUAL INFORMATION

### 1.1. History of the flight

On Wednesday, 10 April 2019, at 12:35, a Diamond Aircraft DA 40 D aircraft, registration G-RKAH, took off on a local flight from and to the Huesca Airport with an instructor and student on board.

At one point in the flight, they prepared to simulate engine stoppages and emergency off-field landings inside area FIZ2, near the town of Huerto.

After flying the approach to the field previously selected by the student, he proceeded to execute the relevant go-around maneuver. While climbing out from said maneuver, the instructor saw a large vulture flying near the aircraft, some 4 m away from the left wingtip. The instructor instinctively moved the control to the right to avoid it, since the student had not seen it. At that point, as the aircraft was turning right, a second vulture, which the crew had not seen, impacted the front of the aircraft. The instructor then took over the controls and they returned to the airport, where they landed without problem.

The occupants were uninjured, but the aircraft sustained significant damage to its front end.

### 1.2. Injuries to persons

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

### 1.3. Damage to aircraft

Much of the front left part of the aircraft's nose was damaged.

### 1.4. Other damage

Not applicable.

### 1.5. Personnel information

#### 1.5.1. Information on the crew of the aircraft

The pilot, a 33 year old Spanish national, had a commercial pilot license (CPL) issued by the UK Civil Aviation Authority (CAA) with a flight instructor rating and an instrument rating (IR) for single and multi-engine piston aircraft, which were valid until 31 October

2019. He also had a class-1 medical certificate that was valid until 19 December 2019. He had an English proficiency level of 6.

He had a total of 1243 flight hours, 1085 of which were on the type and 1056 as an instructor.

The student had the relevant class-2 medical certificate, which was valid until 12 July 2022. He had an English proficiency level of 5.

### **1.6. Aircraft information**

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

The DIAMOND AIRCRAFT DA 40 D aircraft has a maximum takeoff weight of 1150 kg. The accident aircraft had serial number D4258 and was registered with the CAA on 13 July 2017. It was outfitted with a 135-hp THIELERT TAE 125-02-99 engine, with 655 hours.

It had a certificate of airworthiness, issued by the Civil Aviation Authority (CAA) of the United Kingdom on 8 August 2017, and a corresponding airworthiness review extension issued by ROSIQUE AIRCRAFT as an approved CAMO, ES.MG.120, which was valid until 7 August 2019.

The aircraft had an insurance policy that was valid until 14 April 2019.

The aircraft had 5790 flight hours when it underwent a scheduled 100 h inspection on 21 March 2019, during which the aircraft, engine and propeller were checked. In addition to replacing the navigation lights and the first-aid kit, the condition of the rudder cables was checked and the oil was changed in the engine and gearbox, as were the oil and fuel filters.

On the date of the accident, the aircraft had 5877:59 flight hours.

### **1.7. Meteorological information**

According to the information provided by Spain's National Weather Agency (AEMET), the weather conditions in the area at the time of the accident were as follows: few low clouds, with more clouds at an intermediate level, no significant convective activity and good visibility.

The AEMET weather stations closest to the accident site are in Sariñena (16 km South), Huesca Airport (21 km Northwest), Lanaja (22 km Southwest) and Barbastro (27 km Northeast).



The following data were recorded:

**Sariñena:** average wind speed of 13 km/h from the west, gusting to 25 km/h, also from the west, temperature 15° C and relative humidity 53%

**Monflorite:** average wind speed of 5 km/h from the west, gusting to 12 km/h, also from the west, temperature 14° C, relative humidity 48%, pressure 945.8 hPa

**Lanaja:** average wind speed of 17 km/h from the northwest, gusting to 28 km/h, also from the northwest, temperature 14° C and relative humidity 56%

**Barbastro:** average wind speed of 7 km/h from the south, gusting to 18 km/h, from the southwest, temperature 17° C and relative humidity 45%

The 13:00 and 13:30 METARs for the Huesca Airport – Monflorite indicated a wind speed of 6-5 kt from 210°-220°, varying from 160° to 270°, good visibility, few clouds at 4500 ft, temperature 14°-15° C, dewpoint 4°-3° C and QNH 1010 hPa.

METAR LEHC 101100Z 21006KT 160V270 9999 FEW 045 14/04 Q1010

METAR LEHC 101130Z 22005KT 9999 FEW 045 15/03 Q1010

### 1.8. Aids to navigation

Not applicable.

### 1.9. Communications

Not applicable.

### 1.10. Aerodrome information

The Huesca Airport (LEHC) is a public airport in the AENA network that is located 9 km southeast of the city of Huesca.

It has one fully asphalted, 2100 m long, 45 m wide runway for commercial activity in a 12R/30L orientation.

There is a parallel runway, called 30R/12L, for glider operations that is fully asphalted and is 615 m long and 12 m wide.

The aerodrome is at an elevation of 1769 ft.

The AIP makes reference to the possible presence of large birds of prey west of the runways.

### 1.11. Flight recorders

Not applicable.

### 1.12. Wreckage and impact information

Over the course of one of the maneuvers they were performing, the front left part of the aircraft impacted a vulture.

As a result of the bird strike, the aircraft sustained significant damage to its propeller, including the gearbox, the engine cover and the engine (engine mounts, radiators, accessories and connections).



Fig. 1 Front view of the aircraft

### 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***

The pilot of the aircraft provided the following account:

*“as we were practicing emergency landings, after the student chose a field, we executed a go-around. During the climb, I saw a large vulture flying very close to us, some 4 m away from the left wingtip, so I instinctively moved the control column to the right to avoid it, since the student had not seen it. At that point, while we were banking right, a second bird, which I had not seen, came through the propeller and impacted the nose of the aircraft. I then took control of the aircraft, made a call to inform AFIS and other airplanes, applied full power for approximately one minute (the engine sounded strange at first) and then I returned to cruise power (70%). After the initial assessment, considering the distance to the airport and how the aircraft was responding, I decided to return to the airport and make a straight landing”.*

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

Not applicable.

### **1.18. Additional information**

The griffon vulture is afforded special protection from a regulatory standpoint. It is included in Annex I of Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009, on the conservation of wild birds. This means that the member States, in addition to other obligations, are required to adopt the measures needed to ensure its conservation. In the case of Spain, this is done by way of Law 42/2007 of 13 December, on Natural Heritage and Biodiversity (BOE No. 299 of 14 December 2007, amended by Law 33/2015 of 21 September (BOE No. 227 of 22 September 2015)), and its implementing regulations.

According to the report published in 2018 by the SEO titled *The griffon vulture in Spain. Breeding population in 2018 and census method*, the population of griffon vultures has clearly been on the rise, with Spain containing 90% of all the specimens living in the 19 neighboring countries.

Specifically, the province of Huesca ranks sixth in terms of this bird's population, with 5% of the total.

Feeding zones have been implemented throughout Spain for scavenging birds. Aragón has 54, of which 24 are in the province of Huesca.

Portugal and southern France, which have similar habitats, have a much lower population of griffon vultures than Spain.

Not only has the population grown considerably; the behavioral habits of the species and its habitat have also changed due to how easy it is for it to find food, which is located in very specific areas.

The behavior of birds is more erratic and unpredictable when they fly in pairs than when they fly in a flock.

The number of events involving bird strikes has been continuously rising in recent years. The last four years alone have seen ten accidents, which account for almost half of all the accidents since the year 2000. In twelve of these accidents, more than half, the bird was a griffon vulture.

As a result of certain CIAIAC reports involving bird strikes, a total of seven recommendations have been issued to various organizations (Boeing, FAA, AENA, ENAIRE<sup>2</sup>, Ministry of Agriculture, Fishing, Food and the Environment) in order to enhance aviation safety.

Thanks to these recommendations, ENAIRE improved the Aeronautical Information Publication (AIP) by updating the information on the flights of migratory bird and areas with sensitive wildlife, and including three bird concentration maps, one of which is for griffon vultures.

The last of these reports, A-046/2019, reviews all of these recommendations, indicating their current statuses, and issues a new recommendation to the Ministry for the Ecological Transition and the Demographic Challenge:

“It is recommended that the Ministry for the Ecological Transition and the Demographic Challenge, in order to prevent accidents involving aviation safety, apply to the griffon vulture (*Gyps fulvus*) population the exceptions considered in Article 61.1.b) of Law 42/2007 of 13 December 2007, on Natural Heritage and Biodiversity, thereby voiding the prohibitions laid out in Chapter I therein.”

Separately, AESA published a leaflet with recommendations to prevent bird strikes and set up the National Aviation and Wildlife Program.

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

Not applicable.

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<sup>2</sup> ENAIRE – Air navigation manager.

## **2. ANALYSIS**

### **2.1. General**

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

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

The aircraft had the documentation required for the flight.

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

The data recorded at 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 striking the vulture, he quickly checked the operation of the engine. Then, after considering the distance to the airport and the aircraft's response, he decided to return to the airport and make a straight landing.

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

### **2.4. Of the vulture population**

It is normal for vultures to be present and flying in the region of Aragon, and specifically in the area of influence of the Huesca Airport. Because of this, general and sports aviation in the area has a high probability of encountering griffon vulture specimens.

The population has increased due to the implementation throughout Spain of feeding stations for scavenging birds.

The growing population and its increasingly erratic behavior results in frequent encounters and makes it difficult to predict their movements.

The regulation pertaining to the griffon vulture is generally intended to protect the species and does not consider any aspect affecting aviation activities, except for the contents of CHAPTER V, Article 58, Section 1.d) of Organic Law 42/2007, which, among the excepted prohibitions, mentions accident prevention in relation to aviation safety. The last report written involving bird strikes, A-046/2019, issues a new recommendation for the Ministry for the Ecological Transition and the Demographic Challenge pertaining to said Organic Law:

“It is recommended that the Ministry for the Ecological Transition and the Demographic Challenge, in order to prevent accidents involving aviation safety, apply to the griffon vulture (*Gyps fulvus*) population the exceptions considered in Article 61.1.b) of Law 42/2007 of 13 December 2007, on Natural Heritage and Biodiversity, thereby voiding the prohibitions laid out in Chapter I therein.”

It is not deemed necessary to issue a new recommendation since the need to properly manage the population of griffon vultures may already be addressed by the actions that are taken as a result of the previous recommendation.

### **3. CONCLUSIONS**

#### **3.1. Findings**

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

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

The decisions made, and the way in which they were executed, were appropriate.

The aircraft had the documentation required for the flight.

Weather conditions were not limiting for the flight.

The population of griffon vultures in Spain has grown considerably in recent years.

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

The accident was caused by the head-on collision between a vulture and the aircraft.

A contributing factor to this accident is the considerable growth of the vulture population in Spain.