

CIAIAC

COMISIÓN DE
INVESTIGACIÓN
DE ACCIDENTES
E INCIDENTES DE
AVIACIÓN CIVIL

Report A-023/2016

Accident involving a GLASER DIRKS
DG-300 ELAN aircraft, registration D-0118,
in the municipality of Sabiñánigo
(Huesca, Spain) on 7 July 2016



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DE ESPAÑA

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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) nº 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

00:00	Hours and minutes (period of time)
00 °C	Degrees centigrade
CAVOK	Ceiling and visibility OK
Cm	Centimeters
dd.mm.aaaa	Day, month and year (date)
FI(S)	Flight instructor rating (Sailplane)
FLARM	Flight Alarm
ft.	Feet
GPS	Global Positioning System
h.	Hours
Kg.	Kilograms
Km.	Kilometers
LBA	Luftfahrt-Bundesamt (German Civil Aviation Authority)
LECI ICAO	code for Santa Cilia de Jaca aerodrome (Huesca, Spain)
m.	Meters
N/A	Not applicable
NM	Nautical miles
N	North
NE	Northeast
PPL.	Private pilot license
SPL.	Sailplane pilot license
TMG.	Touring motor glider rating
TULM.	Powered ultralight pilot license
UTC	Universal Time Coordinated
VHF	Very High Frequency

Synopsis

Owner and Operator: Private.

Aircraft: Sailplane, GLASER DIRKS DG-300 ELAN N/S 3E417,
registration D-0118

Date and time of accident: Thursday, 7.07.2016 at 17:00 local time

Site of accident: Municipality of Sabiñánigo (Huesca, Spain)

Persons onboard: 1 crewmember, minor injured

Type of flight: General Aviation - Other - Air race

Phase of flight: En route

Date of approval: 31 May 2017

Summary of accident:

On Thursday, 7 July 2016, a DG300 sailplane, registration D-0118, was directly impacted head-on by a vulture while flying some 4 NM NE of Sabiñánigo at an altitude of 2300 m (about 7550 ft).

The impact broke a large portion of the cockpit and part of the instrument panel, and caused minor injuries to both of the pilot's legs.

After the impact, the pilot started a gradual descent from 2300 m to an field N of the town of Sabiñánigo, which is at an elevation of 800 m. The pilot did not have problems controlling the aircraft, though the readings on the anemometer and altimeter gauges froze. The pilot landed the aircraft normally and exited it under his own power.

The investigation has determined that the accident was caused by the collision between the sailplane and the vulture, which damaged the aircraft and injured the pilot.

1. FACTUAL INFORMATION

1.1. History of the flight

The sailplane, a DG300, registration D-0118, left the Santa Cilia de Jaca aerodrome (LECI) at 12:07 UTC on Thursday, 7 July 2016 to take part in a race organized as part of Spain's National Gliding Championship.

The weather conditions were not limiting for this flight, as the visibility was very good and the thermal conditions were suited for sailplaning.

At around 15:00 UTC, the sailplane was rising in a thermal it had intercepted at an altitude of around 1400 m some 4 NM north of the town of Sabiñánigo in order to reach the last point (return to the LECI aerodrome, some 30 km away). It had been climbing for 10 minutes to an altitude of 2300 m, when the front of the aircraft was struck by a vulture, causing a large part of the cockpit canopy to break and impacting the rear of the instrument panel, resulting in the loss of the altimeter and anemometer readings. The wreckage from the cockpit caused superficial cuts to the pilot's legs. His right leg was also impacted laterally.

The pilot did not see the vulture until just before the impact, and was thus unable to take any evasive maneuvers.

After the impact, the pilot reported the incident and started a gradual descent, making no sudden motions as he looked for a field where he could land. He descended from an altitude of 2300 m to an obstacle-free field at an elevation of 800 m that was north of the town of Sabiñánigo. The field was listed in the "Book of Landable Fields in the Pyrenees".

He made the descent in about 15 minutes without using the air brakes. He did not have any problems controlling the aircraft. He did have problems communicating due to the loud wind noise resulting from the broken canopy. He was also unable to rely on the anemometer and altimeter readings, which were not responding. On short final he deployed the air brakes and lowered the landing gear and was able to land without further incident.

After landing, the sailplane was towed in its carrier to the Santa Cilia aerodrome (LECI). The pilot went to the hospital in Jaca, where the wounds on both legs were cleaned and disinfected.

1.2. Injuries to persons

Injuries	Crew	Passengers	Total in the aircraft	Others
Fatal				
Serious				
Minor	1		1	N/A
None				
TOTAL	1		1	

1.3. Damage to aircraft

Around 70% of the canopy's glass was broken, from the front of the cockpit to just behind the pilot's head. The frame also delaminated in several areas.

The impact affected the behavior of the instruments, moving the FLARM, the operation of which was not checked, and causing the loss of the anemometer and altimeter readings.

A navigational device mounted with a suction pad inside the canopy was lost when it fell out.



Figure 1. Damage to the glider's canopy

1.4. Other damage

None.

1.5. Personnel information

1.5.1. Pilot

- Age: 43
- Nationality: Spanish
- Licenses: PPL, SPL and TULM (all of them valid)
- Ratings: TMG and FI(S)
- Medical certificate: Class 2 and 3 in order (valid until 3/12/2016)
- Total flight hours: 1000
- Flight hours on the accident aircraft type: over 500

1.6. Aircraft information

1.6.1. General information

- Manufacturer: GLASER DIRKS
- Model: DG-300 ELAN
- Serial number: 3E417
- Registration: D-0118
- Year of manufacture: 1992
- Valid certificate of airworthiness issued by the LBA, Luftfahrt-Bundesamt (German Civil Aviation Authority)
- Empty weight: 238 kg
- Maximum takeoff weight: 500 Kg
- Takeoff weight on accident flight: 315 Kg

The glider was equipped with an altimeter, anemometer, variometer and GPS.

1.7. Meteorological information

The atmospheric and weather conditions were not limiting for flying a glider. The visibility was very good, CAVOK situation with some cumulus clouds above 3000 m.

1.8. Aids to navigation

Not applicable.

1.9 Communications

The sailplane pilot had a VHF transmitter.

1.10. Aerodrome information

Not applicable.

1.11. Flight recorders.

The pilot was being aided by a GPS device.

The GPS did record the full flight. A study of the flight path shows that it was during the last climb, done with help from a thermal, that the glider collided with the vulture. The glider reached an altitude of 2300 m during this climb. Then, in a controlled, spiraling descent, the pilot was able to fly to a field where he could land the aircraft.



Figure 2. Views of the final climb showing where the aircraft impacted the vulture and the descent to the landing location



Figure 3. Views of the final climb showing where the aircraft impacted the vulture and the descent to the landing location

1.12. Wreckage and impact information

After landing normally in a field that was listed in the “Book of Landable Fields in the Pyrenees”, the glider was transported in its carrier to the Santa Cilia aerodrome (LECI).

1.13. Medical and pathological information

The pilot sustained minor injuries, namely superficial cuts to both legs and a bruise to the side of his right leg.

1.14. Fire

Not applicable.

1.15. Survival aspects

After colliding with the vulture, the pilot sustained minor injuries and the aircraft’s cockpit and instrument panel were damaged. Despite this, the pilot was in good condition physically to continue flying and the aircraft did not exhibit any control problems. The pilot was able to land the aircraft normally in the nearest suitable field, after which he exited the aircraft under his own power.

1.16. Tests and research

1.16.1. Pilot's statement

The pilot stated that *"The cause of the accident was seeing the vulture too late and not being able to avoid hitting it. It was a full head-on collision on opposite trajectories. The feeling I had was like when you are hit in the face with a ball. At most I may have shifted my body, but there is no way I could have maneuvered the glider in that short a time.*

I am used to looking out for birds (especially vultures), primarily for two reasons: as the pilot of a glider, you often look for them to find updrafts (though not in this case, as I had been in a thermal for some minutes); and as the pilot of a powered aircraft, I fly in Navarre (in the area of the Pyrenees), where there are many vultures and unfortunately we have a history of collisions, several of them fatal, with vultures. It was clear to me that to avoid an impact, I should maneuver upward, since at the Navarre Aeroclub, to which I belong, there is a biologist who is an expert on vultures who had told us that years ago, along with other keys to the behavior of vultures.

As to why I did not see the vulture, I was thinking about it and I came up with a few factors: I was following another glider that was in a nearby thermal higher up than me; I was at the final point of the day's stage, waiting for the flight computer to indicate the final glide to Jaca. Logically, it was a race and I was not relaxed and "looking at the landscape" as I might have been on other flights."

1.17. Organizational and Management information

Not applicable.

1.18. Additional information

Although the type of vulture that struck the glider could not be determined, the griffon vulture (*Gyps fulvus*) abounds in the accident area. This is a large daytime bird of prey and scavenger, with adult birds growing to a length of 96 to 110 cm, a wingspan of 250 to 280 cm and weighing from 4.5 to 7 kg.

It is a soaring bird of prey that generally inhabits mountainous areas with deep valleys that give rise to thermal updrafts, which they use to reach altitudes of 1,800 to 3,500 m, flying in circular motions in a direction that is determined by the largest of the birds.

The griffon vulture population in Spain has grown considerably in the last decade. Specifically, in the province of Huesca, the main colonies are found in the northwest of the province, in the mountains that flank the shores of the Gállego River, on the border with Zaragoza and very close to the aerodromes that are home to most of the sailplaning activity.

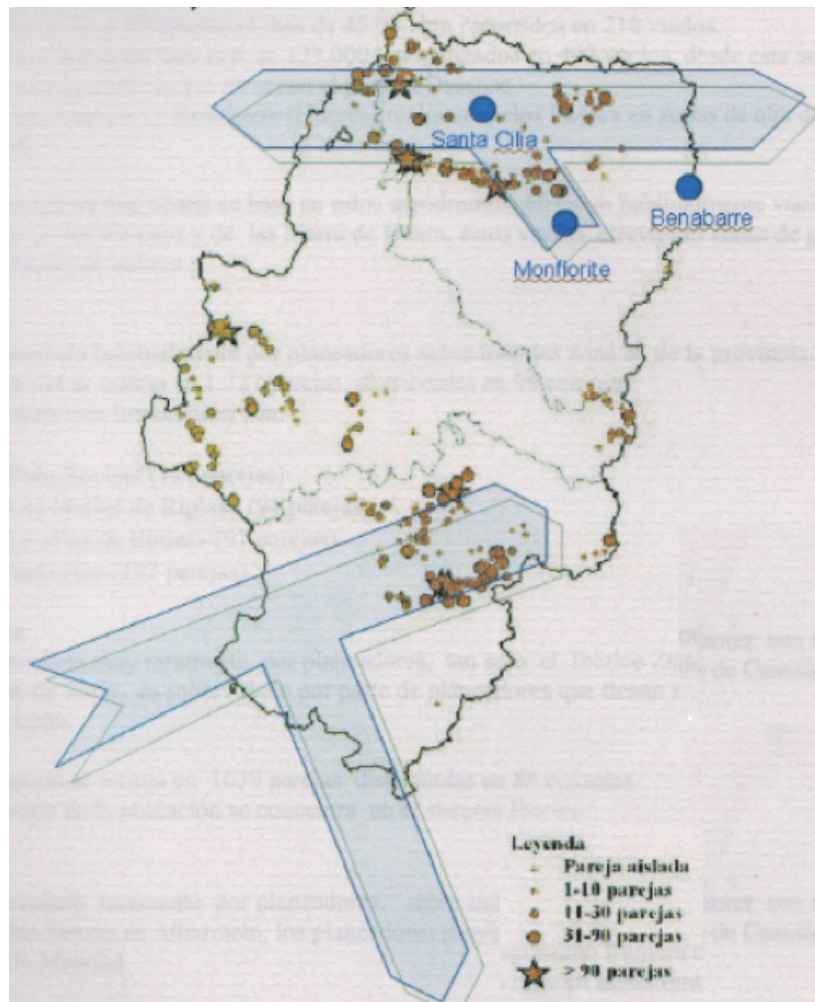


Figure 4. Colonies of vultures and flight areas in Aragón

1.19. Useful or effective investigation techniques

Not used.

2. ANALYSIS

2.1. General

The accident flight of the glider took place during a competition that was part of the Spanish Gliding Championship. These races require the pilots to start their flights a few seconds apart in the direction of the first waypoint. For the entire race the gliders are separated by very little distance. At the end, after completing the race and passing through the waypoints specified by race organizers, they return to the aerodrome. Each day's winner is the pilot who reaches the finish line, which is at the starting aerodrome, in the fastest time.

The airspace through which the gliders fly, making use of thermal currents and mountain waves to remain aloft, is the same that is used by large birds of prey, like vultures, of which there are large colonies in the area.

2.2. Flight maneuvers

The pilot had considerable experience doing this type of flight and was perfectly aware of the possibility of encountering a large bird of prey. He also knew that the best maneuver to execute in the event that he ran into one was to climb to avoid it, since the animal's natural instinct is to fold its wings and drop.

The pilot also knew that by paying attention to the racing activity, tracking the waypoints and keeping track of other gliders, he was not as mindful of the birds as he should have been.

The vulture appeared in his field of view very suddenly and was already too close to allow him to execute an evasive maneuver, which made the collision inevitable.

2.3. Survival

After colliding with the vulture, both the pilot's physical condition and the status of the glider's controls were such that he had no problem finding a suitable field nearby, making a controlled descent and landing normally. He was able to exit the aircraft under his own power.

3. CONCLUSIONS

3.1. Findings

- The pilot had the license required to fly that aircraft type and it was valid.
- The aircraft had a valid certificate of airworthiness.
- The weather conditions were not limiting for flying a glider.
- The area where the flight took place is home to a large number of vulture colonies.
- The pilot had ample experience with this type of flight and in the area where the accident occurred.
- The pilot was aware of the possibility of running into a bird of prey and knew the right evasive maneuver.
- The bird appeared in his field of vision suddenly, leaving him no time to maneuver.
- The pilot's physical condition and the status of the glider's controls were such that he had no problem landing in a nearby field.

3.2. Causes/Contributing factors

The accident was the result of a frontal impact with a large bird of prey. Contributing to the accident was the fact that the pilot was focused on the race and was not as attentive to the presence of birds of prey as he would have been during a leisure flight.

4. SAFETY RECOMMENDATIONS

No safety recommendations are issued.