

TECHNICAL REPORT

A-008/2022

**Accident occurred to aircraft CESSNA
FA 150K, registration D-EATU, on
February 16, 2022 in Las Cabezas de
San Juan (Sevilla, Spain)**

Please note that this report is not presented in its final layout and therefore it could include minor errors or need type corrections, but not related to its content. The final layout with its NIPO included (Identification Number for Official Publications) will substitute the present report when available.



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 and its 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 5.6 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 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

ACC	Area Control Center
ARC	Airworthiness Review Certificate
AESA	Spanish Aviation Safety and Security Agency
ATO	Approved Training Organization
ATC	Air Traffic Control
CPL(A)	Commercial Pilot License (aircraft)
CRS	Certificate of Release to Service
CTR	Control zone
EASA	European Aviation Safety Agency
ft	Feet
GS	Ground speed
h	Hour
HL	Local time
kg	Kilogram
kt	Knots
LEJR	ICAO code for Jerez airport
m	Meter
METAR	Meteorological aerodrome report
mph	Miles per hour
N	North
PPL(A)	Private Pilot License (aircraft)
QNH	Altimeter subscale setting to obtain elevation or altitude
s	Second
SEP(land)	Single-engine piston aircraft rating
TWR	Tower
UE	European Union
UTC	Universal time coordinated
VFR	Visual flight rules

Technical report

A-008/2022

Owner:	FIS ATO EUROPE, S.L.
Operator:	Fly-in-Spain
Aircraft:	CESSNA FA 150K, registration D-EATU
Date and time of accident:	February 16, 2022; 12:07 HL
Site of accident:	Municipality of Las Cabezas de San Juan (Sevilla)
Persons on board:	1, fatal
Type of flight:	General aviation– instruction flight - solo
Phase of flight:	Route
Type of operation	VFR
Date of approval:	27 July 2022

Synopsis

Summary:

On Wednesday, February 16, 2022, the CESSNA FA 150K aircraft, registration D-EATU, suffered an accident in the municipality of Las Cabezas de San Juan (Sevilla).

The aircraft had taken off from Jerez airport with a single occupant on board, to make an instructional flight with destination the same airport. At approximately 12:07 p.m., it hit the land on a farm north of the airport. The only occupant on board died. The aircraft suffered significant damage.

The investigation has determined that the cause of the accident was the loss of control of the aircraft in flight, resulting in a spin that caused the impact against the ground.

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1.- FACTUAL INFORMATION

1.1.- History of the flight

On Wednesday, February 16, 2022 at 12:07 p.m., the CESSNA FA 150K aircraft, registration D-EATU, suffered an accident in the municipality of Las Cabezas de San Juan (Sevilla)

The aircraft had taken off on runway 02 of Jerez airport at 11:08 a.m. with a student-pilot as the sole occupant, in order to make a local navigation flight of 2 hours. The student had scheduled for the next day the proficiency check for the renewal of the SEP(land) rating of his PPL(A) license, expired on 28/02/21.

During the flight the pilot was in contact with Sevilla ACC. The radar information provided by ENAIRE shows that, throughout the flight, the aircraft descends below radar coverage up to four times and turns are made continuously. At 12:07:23 h the radar stops showing traffic altitude information, and shortly after the trace is permanently lost.

The instructor at the school monitoring communications said that after listening to air traffic control trying to contact the aircraft, he called the student by mobile phone, with no result.

Witnesses present at a farm 35 km north of the airport, observed how the aircraft descended rotating to the left in an attitude close to the vertical, until it hit the ground. They also pointed out how they could hear the engine running at all times, and how when approaching the ground the aircraft reduced its speed significantly.

As a result of the accident, the only occupant on board died.

1.2.- Injuries to persons

<i>Lesiones</i>	<i>Crew</i>	<i>Passengers</i>	<i>Total in the aircraft</i>	<i>Other</i>
Fatal	1			
Serious				
Minor				N/A
None				N/A
TOTAL	1			

1.3.- Damage to aircraft

The aircraft suffered damage affecting fuselage, wings, propeller and landing gear.

1.4.- Other damage

No other damage occurred.

1.5.- Personnel information

The pilot, 26 years old, had a PPL(A) license issued by the Civil Aviation Authority of the United Kingdom on 17/01/2017, and SEP(land) rating revalidated for the last time on 12/02/19 with validity until 28/02/21. He also had a Class 1 medical certificate valid until 13/07/22.

According to the information provided, he had 70 hours of experience at the time of the accident, and was receiving instruction to renew the expired SEP(land) rating, as well as to subsequently carry out the conversion from a UK PPL(A) national licence to a licence under EASA requirements. The PPL(A) license course had been taken at the same school. The subsequent performance of 63 hours of flight had also been specified by contract, in order to accumulate time for obtaining the CPL(A) license.

The pilot logbook indicates that he had remained without flying from 14/02/19 until 31/01/22, when the aforementioned instructional flights began to be carried out. After starting these flights and until the moment of the accident, 19.1 h of instruction had been carried out, of which 12.5 h were of flight with instructor, 5.6 h of solo flight and 1 h of training on the ground.

The pilot had completed the 5.6 h of solo flight in 1 flight made on the 14th and 2 flights made on february 15, all of them in the D-EATU aircraft. The verification of competence for the renewal of the SEP(land) rating was scheduled for the day following the accident (17/02/22).

The assigned instructor indicated that, during the previous instruction, loss recovery had been practiced on both Cessna 172 and Cessna 150 aircraft.

EASA was consulted regarding a solo flight with the SEP rating pending renewal, indicating that, since the pilot is training in an ATO under the supervision of an instructor, there are no objections to that flight.

1.6.- Aircraft information

The CESSNA FA 150K aircraft, registration D-EATU, is an aircraft with an empty mass of 447 kg and a maximum take-off mass of 726 kg. It was manufactured in 1970, its serial number is 0029 and had airworthiness certificate No. 44652 issued by the German Federal Office of Civil Aviation on December 14, 2020. It was entered in the Aircraft Registration Register of the Federal Republic of Germany on 20 December 2020, being previously registered in the United Kingdom. It was equipped with a CONTINENTAL O-200 model engine and metal twin-blade propeller.

The last ARC had been issued on January 10, 2022 with validity for 1 year. At the time of the accident it had 10630.5 h of flight.

The CRS corresponding to the last 50 h revision was issued on 11/30/21, having the aircraft at that time with 10612 h of flight.

The receipt of the last refueling indicates that it was done on the day of the accident, loading 10.2 gal of fuel into the tanks.

According to the Flight Manual, the aircraft's stall entry speeds are 55 mph with flaps up (48 kt), and 48 mph with flaps down (42 kt).

1.7.- Meteorological information

The METARs corresponding to Jerez airport around the time in which the accident occurred are:

SA 16/02/2022 11:30 METAR LEJR 161130Z 35010KT CAVOK 15/05 Q1032=

METAR of Jerez on the 16th at 11:30 UTC. Wind of 350° direction with an intensity of 10 kt. Visibility of 10 km or more. Absence of clouds below the reference height CAVOK, and absence of cumulonimbus (CB) and tower-shaped clusters (TCU). No significant time phenomenon. Temperature 15°C, dew point 5°C QNH 1032 hPa.SA

16/02/2022 11:00 METAR LEJR 161100Z 35011KT 320V020 CAVOK 14/04 Q1032=

METAR of Jerez on the 16th at 11:00 UTC. Wind of 350° direction with an intensity of 11 kt. The wind direction is variable from 320° to 020°. Visibility of 10 km or more. Absence of clouds below the reference height CAVOK, and absence of cumulonimbus (CB) and tower-shaped clusters (TCU). No significant time phenomenon. Temperature 14°C, dew point 4°C QNH 1032 hPa.

Figures 1 and 2 attach the maps with wind forecasts at 12:00 UTC for levels FL020 and FL50 respectively. The area of the accident is indicated approximately in red.

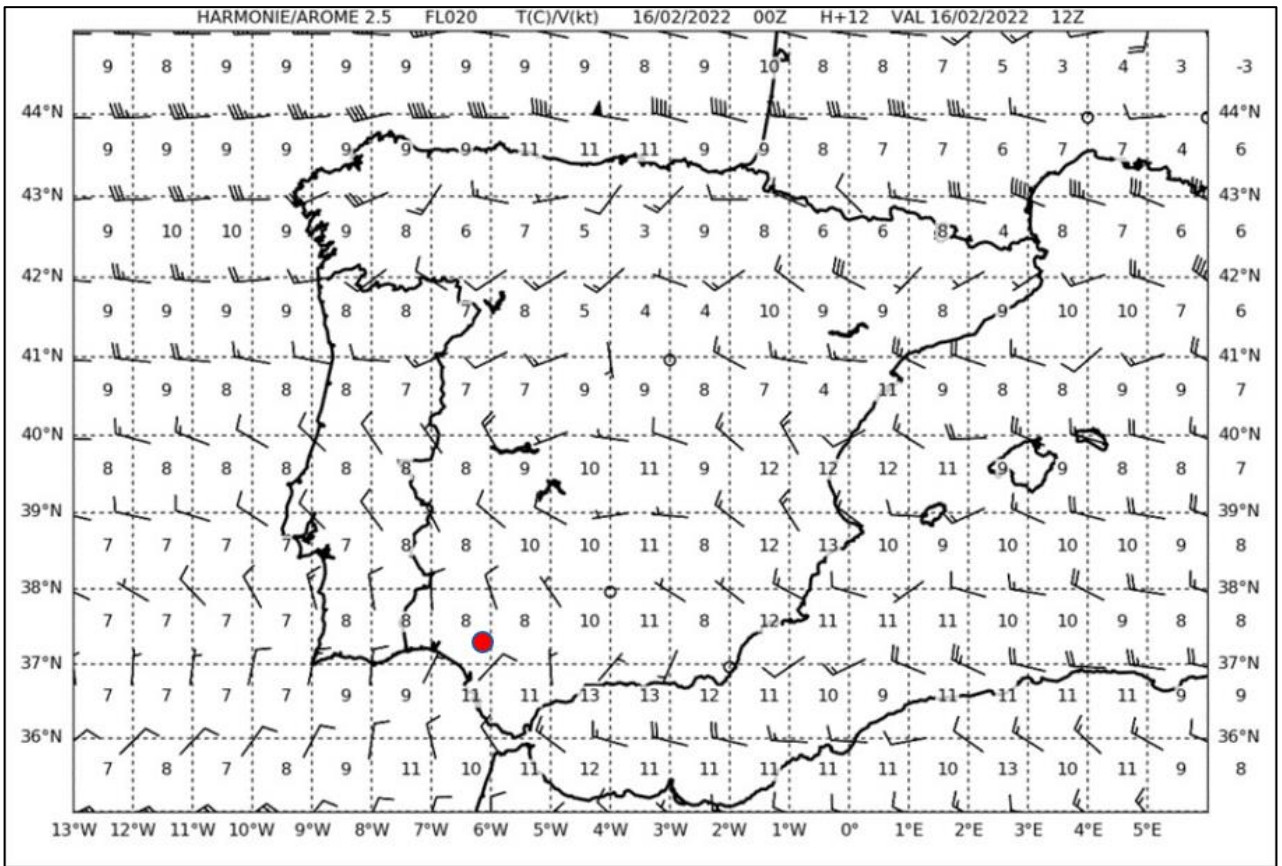


Figura 1. Wind map FL020

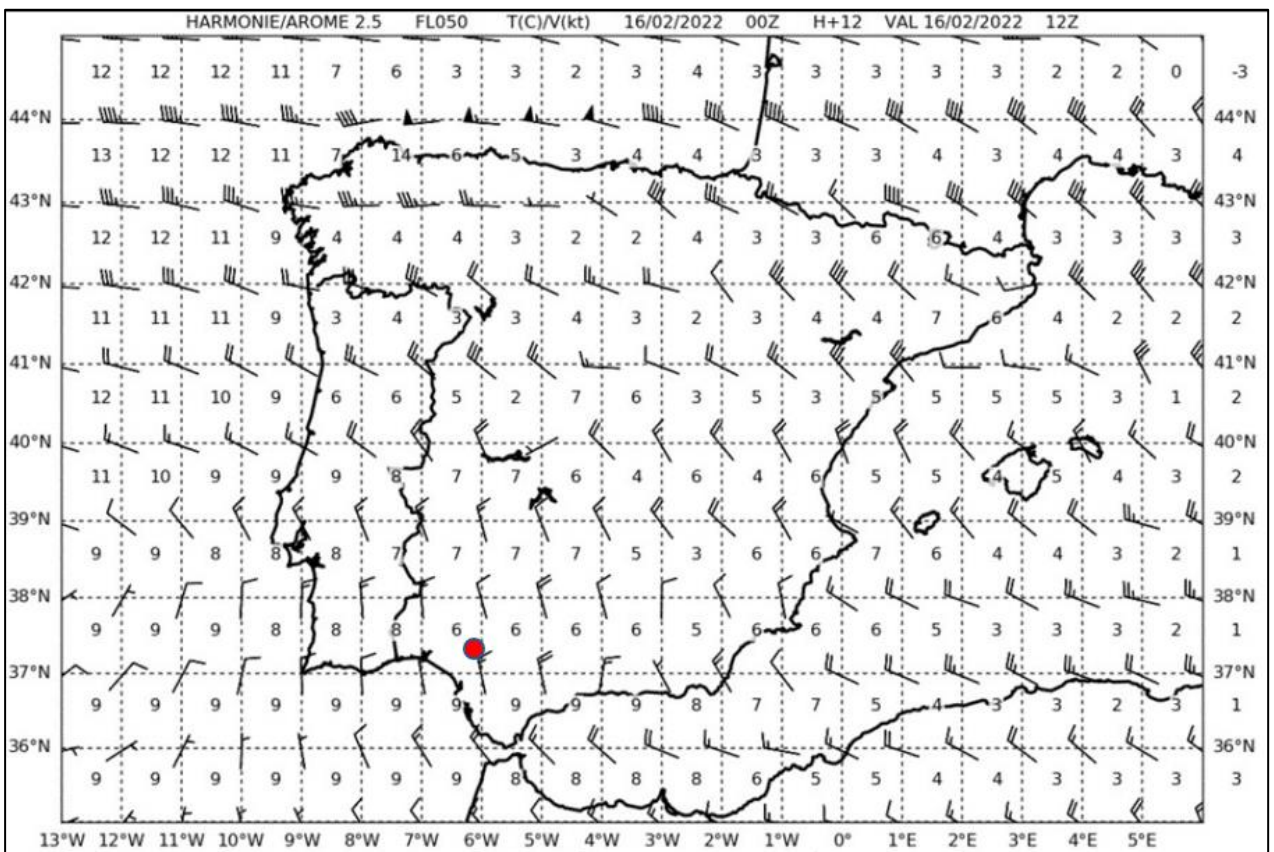


Figura 2. Wind map FL050

1.8.- Aids to navigatio

Not applicable. The flight was performed under the rules of visual flight.

1.9.- Communications

According to the information provided, there were no relevant communications prior to the accident.

1.10.- Aerodrome information

Jerez Airport (LEJR) is located 8 km northeast of the city of Jerez. The elevation is 93 ft and it has an asphalt track of dimensions 2300x45 m and orientation 02/20. Tower communications are carried out on the frequency 118,550 MHz. Once the aircraft is out of the CTR it will establish communications with Approach at the frequency of 128,500 MHz.

1.11.- Flight recorders

The aircraft was not equipped with a flight data recorder or voice recorder at the cockpit, as this was not required by the relevant aeronautical regulations.

1.12.- Wreckage and impact information

The aircraft was located on an agricultural farm about 35 km north of Jerez airport.



Figura 3. Aircraft at the crash site

In the image of Figure 3 it can be seen its final position.

1.13.- Medical and pathological information

According to the information provided from the autopsy performed, there is no evidence that physiological factors could have affected the performance of the only occupant on board, who died due to injuries sustained in the accident.

1.14.- Fire

No fire occurred in the aircraft or in the surroundings.

1.15.- Survival aspects

The aircraft was in radar contact with Sevilla Control Center (LECS), which informed LEJR TWR at 12:20 p.m. that it had lost contact. After repeated attempts to contact the traffic, a signal was received from the emergency beacon installed in it, and later an emergency helicopter went to the scene of the accident, after having received a call to 112 informing of the accident.

No anomalies were observed in the cabin restraint systems. The compartment suffered deformations, due to the damage caused to the fuselage by the impact with the ground.

1.16.- Tests and research

1.16.1 Aircraft inspection

The aircraft was inspected at the crash site and then carried to Trebujena airfield, where it was examined later with the help of technical assistance.

It was observed that the flap movement spindle, located on the right wing and driven by an electric motor, was in the position of flap retracted. The left flap, driven by cables and pulleys, was extended as a result of the impact. Both wings had been bent downwards by the vertical impact suffered with the ground, having the left wing fractured at the root.



Figura 4. Damages in aircraft

The images in Figure 4 show the condition of the aircraft, with both wings deformed by the impact.

It was found that there was continuity of the rudder control cables. There was also continuity of the elevator cables from the tail assembly to the cabin, although the continuity in the part of the control column could not be verified, as it was damaged by the impact. The ailerons control cables were tensioned due to the deformations suffered by the wings.

The control rods in the flight deck were bent, with important damages in the instrument panel due to the impact.



Figura 5. Damages in propeller

The farm on which the aircraft impacted was an uncultivated rice paddy, with a soft and sandy soil. Marks were observed on the propeller blades indicating rotation at the time of impact.

The fuselage was deformed and the propeller spinner bent upwards due to the impact. The engine mounting was also damaged and oil loss had occurred, but it was found that the crankshaft could be turned without resistance. Oil filters and spark plugs were removed, and no anomalies were observed. No signs indicating that there might have been a malfunction in the engine were detected.

It was visually verified that some fuel remained in the tanks, indicating the emergency services that after the accident part of it was poured into the ground.

No evidence was detected of a structural failure previous to the accident, or that there had been any impact against the fuselage, not being missing any part of it.

1.16.2 Radar information provided by ATC

From the radar information provided by ENAIRE, it is observed that the aircraft takes off on runway 02 of Jerez airport, after which it turns left to go towards point W and leave the CTR at that point, ascending to 2200 ft and heading north. During the flight, of approximately 1 h duration, it is observed how up to four descents are made below radar coverage, disappearing the trace corresponding to the aircraft in each of them.

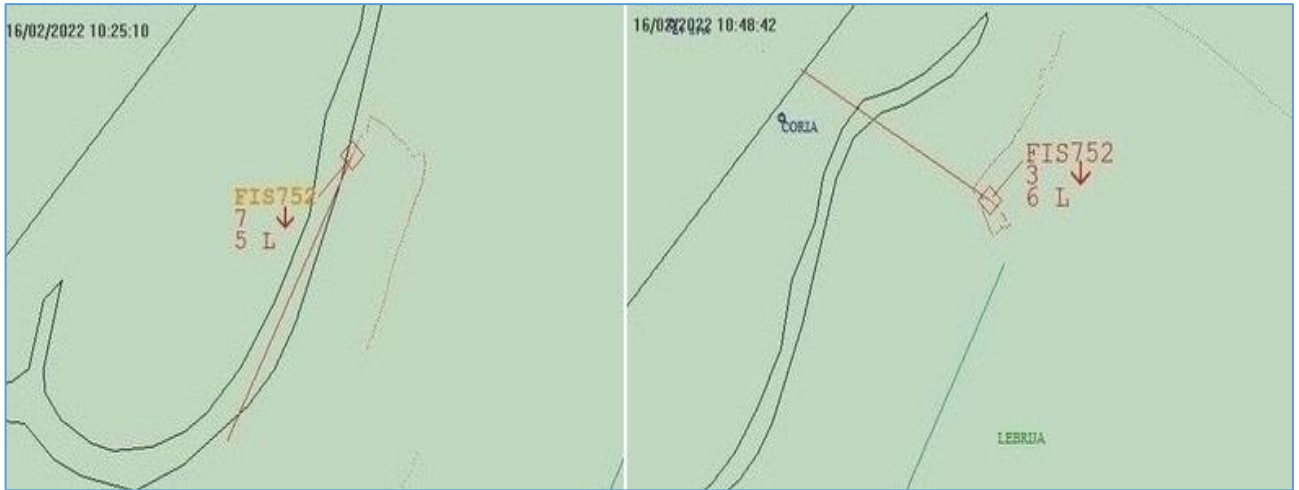


Figura 6. First and second descent FIS752

Figure 6 shows radar images of the flight, with callsign FIS752, descending at 11:25:10 h and 11:48:42 h (local time), before missing radar coverage at 700 and 300 ft altitude respectively, to reappear later in ascent.



Figura 7. Third and fourth descent FIS752

The images in Figure 7 show the descents made below 400 and 300 ft, at 11:52:28 h and 11:55:16 h respectively. After ascending again, the aircraft remains in the same area, at about 3000 ft altitude.

In general, the radar video shows the realization throughout the flight of ascents and descents, as well as continuous changes of course.

1.16.3 Ground speed of the aircraft

At 12:06:58 (local time), the aircraft being at 3100 ft, a ground speed of 59.38 kt is recorded, which decreases suddenly.

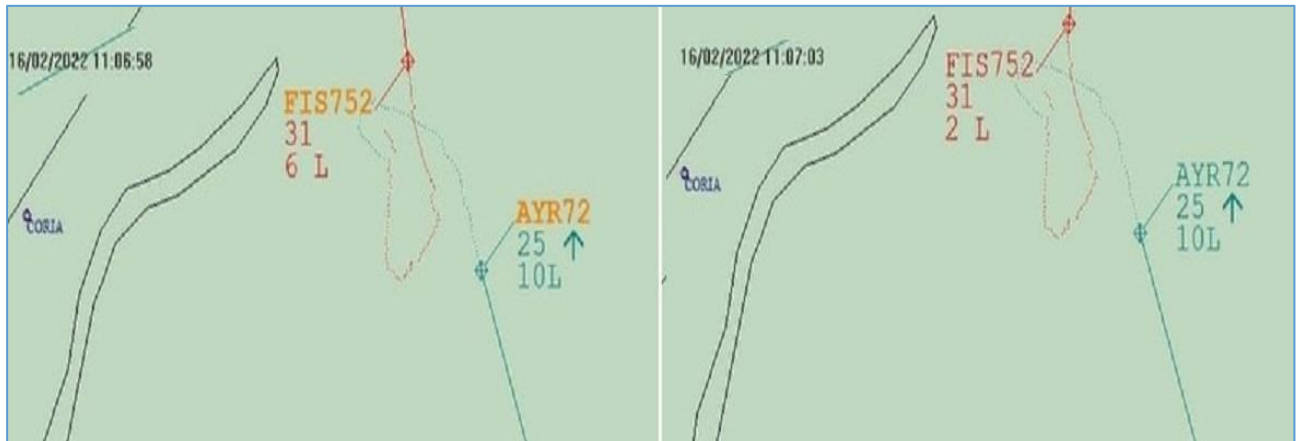


Figura 8. Ground speed decrease FIS752

According to the radar data provided, 3 s later the ground speed is 18.84 kt. After this the altitude information is lost and the radar trace disappears from the screen.

From the radar information, the graph in Figure 9 shows the variation of the ground speed of the aircraft in the last part of the flight.

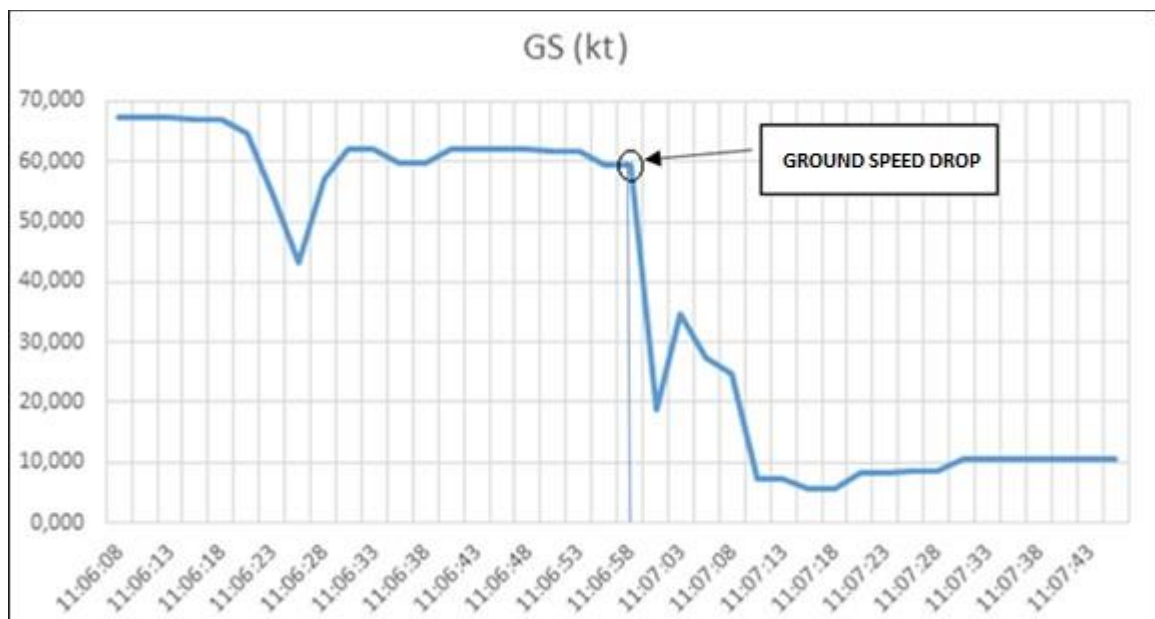


Figura 9. Ground speed variation FIS752

After the speed drop occurred at 12:06:58 h, the coordinates indicating the position of the aircraft (37° 03' 50"N 06° 01' 56"W) no longer change, indicating that it no longer moves with respect to that point. These coordinates coincide with those of the place where the remains of the aircraft were located.

1.16.4 Video provided by witnesses

Witnesses near the crash site watched the aircraft descending and rotating leftwards. They could hear the engine running at all times. One of the witnesses also indicated that as it approached the terrain, the aircraft reduced its speed.



Figura 10. Video frames aircraft D-EATU

Figure 10 attaches several frames of a video recorded by one of the witnesses with his mobile phone. In these it can be seen the aircraft descending in a spin.

1.17.- Organizational and management information

Fly-in-Spain is a German management group that aims to train pilots in Spain, operating at Jerez airport. It offers training to obtain LAPL, PPL, CPL and ATPL licenses, and SEP, IR, MEP, ME-IR, NVFR, FI, IMC ratings, as well as mountain flight, acrobatics, and type ratings of various aircraft.

Winglider LTD, a member of this group, is an Approved Training Organisation based in the United Kingdom, which holds a certificate of approval issued by the UK Civil Aviation Authority of reference GBR. ATO-0216. To continue operating in Spain after the exit of the United Kingdom from the EU, it holds a certificate issued by EASA dated 01/01/21, of reference EASA. GBR. ATO.0216.

Training Organisations approved in third countries and operating within the EU therefore have EASA approval to carry out their activity.

1.18.- Additional information

Not applicable.

1.19.- Useful or effective investigation techniques

Not applicable.

2.- ANALYSIS

According to the information obtained, the student-pilot was carrying out instruction in order to renew the expired SEP rating of his PPL(A) license, as well as to subsequently carry out the conversion of the national license of the United Kingdom to a license according to EASA requirements. A 2 hour VFR flight plan had been submitted, and according to the information provided the student would perform a solo local navigation flight.

In the radar images provided by ENAIRE it is observed, however, how during the flight maneuvers are carried out in an area located north of Jerez airport, carrying out ascents and descents in such a way that on several occasions the radar coverage of the aircraft is lost. Multiple turns can also be observed.

At 12:06:58 h and at 3100 ft altitude, the ground speed of the aircraft decreases abruptly without increasing significantly again, and the coordinates that indicate the position of the aircraft no longer suffer variation. Witnesses in that area observed the aircraft descending rapidly as it rotated leftwards, as shown in a video of a few seconds recorded by one of them.

The examination of the aircraft showed no signs of any previous impact on birds or any obstacles, and determined that no part of the fuselage was missing. Likewise, it was possible to establish continuity of the controls, except in the part of the control column, due to the damage suffered on impact. The mechanism of actuation of the flaps, located in the right wing, reflects that they were retracted at the time of the accident. From this, it was not possible to determine a failure of the control surfaces that could have caused an asymmetry during the flight. While the exact engine power setting could not be determined, the marks and level of damage on the propeller supported witness evidence that the engine was running, probably at a low power setting, when the aircraft struck the ground.

As the aircraft was not equipped with a flight data recorder, it is unknown the maneuver that was carried out at the time when the ground speed suddenly decreased. With the information available, it is likely that the pilot carried out a turn with a bank angle such that a stall

occurred, and that it could have resulted in a spin after this. It cannot also be ruled out that other maneuvers were being practiced, such as the recovery of loss or slow flight.

One of the witnesses indicated that, when approaching the terrain, the aircraft decreased its speed, which could be due to the action of the pilot pulling on the control wheel trying to stop the descent. This action could have lead to a flattening of the spin.

According to the information provided, the student had scheduled for the next day the completion of the proficiency check for the renewal of his PPL(A) license, so it is possible that the performance of these maneuvers was related to the test.

It should also be borne in mind that, during the course to obtain the PPL(A) license, although stall recovery is practised, it is not practised recovery from spins.

3.- CONCLUSIONS

3.1.- Findings

- A flight plan was submitted for a visual navigation flight, but maneuvers such as ascents and descents, as well as turns, were carried out in it.
- At 12:06:58 h and at 3100 ft altitude there is a sudden drop in the ground speed of the aircraft, going from 59.3 to 18.8 kt, and disappearing shortly after the traffic from the radar screen.
- Witnesses near the crash site provided a video in which the aircraft can be seen descending in a spin.
- A technical failure in the aircraft that could have influenced in the accident could not be determined.

3.2.- Causes/Contributing factors

The cause of the accident is considered to be the loss of control in flight, resulting in a spin that caused the impact of the aircraft against the ground.

4.- SAFETY RECOMMENDATIONS

No safety recommendations are issued.