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AVIACIÓN **C**IVIL

Report A-001/2020

Accident involving a Cessna FRA-150-M aircraft, registration EC-CVP, on 14 January 2020, in the mucipality of Villamanta (Madrid)

GOBIERNO DE ESPAÑA

MINISTERIO DE TRANSPORTES, MOVILIDAD Y AGENDA URBANA

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COMISIÓN DE INVESTIGACIÓN DE ACCIDENTES E INCIDENTES DE AVIACIÓN CIVIL

Tel.: +34 91 597 89 63
Fax: +34 91 463 55 35
E-mail: ciaiac@mitma.es
http://www.ciaiac.es
C/ Fruela, 6
28011 Madrid (España)

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.

Contents

Abbreviations

° ' "	Sexagesimal degrees, minutes and seconds
ºC	Degrees Celsius
AESA	Spain's National Aviation Safety Agency
AEMET	Spain's State Meteorological Agency
ARO	Air Traffic Service Reporting Office
ATIS	Automatic Terminal Information Service
CPL(A)	Commercial Pilot Licence
CRI(A)	Class Rating Instructor
FI(A)	Flight Instructor Rating (Aircraft)
ft	Feet(s)
h	Hour(s)
hPa	Hectopascal
IR(A)	Instrumental Rating (Aircraft)
kg	Kilogramme
km	Kilometre
km/h	Kilometre per hour
kt	Knot(s)
LAPL	Light Aircraft Pilot Licence
LECU	Cuatro Vientos Airport
LT	Local time
m	Metre(s)
MEP	Multi-Engine Piston Aircraft Rating
METAR	Aviation routine weather report
NOTAM	Notice to airmen
QNH	Altimeter setting to obtain elevation above sea level when on the ground
PPL	Private Pilot License
rpm	Revolutions per minute
SEP	Single-Engine Piston Aircraft Rating
TAFOR	Terminal Aerodrome Forecast
UTC	Universal Time Coordinated
VFR	Visual Flight Rules
W	West
Z	Time in UTC

Synopsis

Operator:	Aeromax, S.L.
Aircraft:	CESSNA FRA-150-M, registration EC-CVP
Date and time of accident:	14/January/2020, 10:10 LT[1]
Site of accident:	Municipality of Villamanta (Madrid)
Persons on board:	One seriously injured, one unharmed
Type of flight:	General aviation - Training flight- Dual command
Flight rules:	VFR
Phase of flight:	Manoeuvring- Others
Date of approval:	28/10/2020

Summary of incident

On Tuesday, 14 January 2020, the Cessna FRA-150-M aircraft, registration EC-CVP, suffered an accident while carrying out an emergency off-airfield landing due to an in-flight engine power loss.

The aircraft had taken off from Cuatro Vientos Airport to carry out a training flight with a student and instructor on board. While practising using the compensator, the crew realised the engine wasn't supplying enough power to maintain altitude. At first, they decided to head towards the closer alternative airfield of Casarrubios del Monte, but when it became clear they were unlikely to make it there either, they opted to carry out an emergency landing in a labor field.

After making its first contact with the ground, the aircraft bounced, hitting the ground again 8 m further ahead and causing the nose gear leg to collapse. It travelled a further 4 m before eventually flipping over.

The instructor was unharmed and the student was severely injured.

The aircraft was significantly damaged.

The investigation has determined the most probable cause of the accident as the performance of an emergency off-airfield landing due to an in-flight engine power loss.

[1] Unless specified otherwise, all times in this report are local. On the day of the incident, local time was UTC+1 hour.

1. FACTUAL INFORMATION

1.1. History of the flight

On Tuesday, 14 January 2020, the CESSNA FRA-150-M aircraft, registration EC-CVP, took off from Cuatro Vientos Airport for a local training flight scheduled to last for an hour and a half. Two people were on board - the instructor and the student.

Prior to the start of the flight, at approximately 9:00 h, they began the pre-flight inspection, which, among other things, includes draining the engine and tanks and checking the condition of the airframe. They confirmed there were no traces of water in any of the drainage points and scraped the frost off the windows and wings. They also refuelled and checked the engine oil levels.

Twenty minutes later, they started the engines. Due to congestion at the airport, they remained waiting in the aircraft, taking the opportunity to discuss the briefing and warm up the engine.

Once at the holding point and with adequate temperature, they carried out the engine test and verified that the parameters were correct.

At 9:45 h, they were cleared to take off on runway 27, and after reaching point W at 3000 ft, they proceeded towards Sevilla la Nueva and ascended to 3500 ft. Given the accumulation of traffic reported in the area at 4000 and 4500 ft, they decided to continue towards the town of Aldea del Fresno without changing altitude.

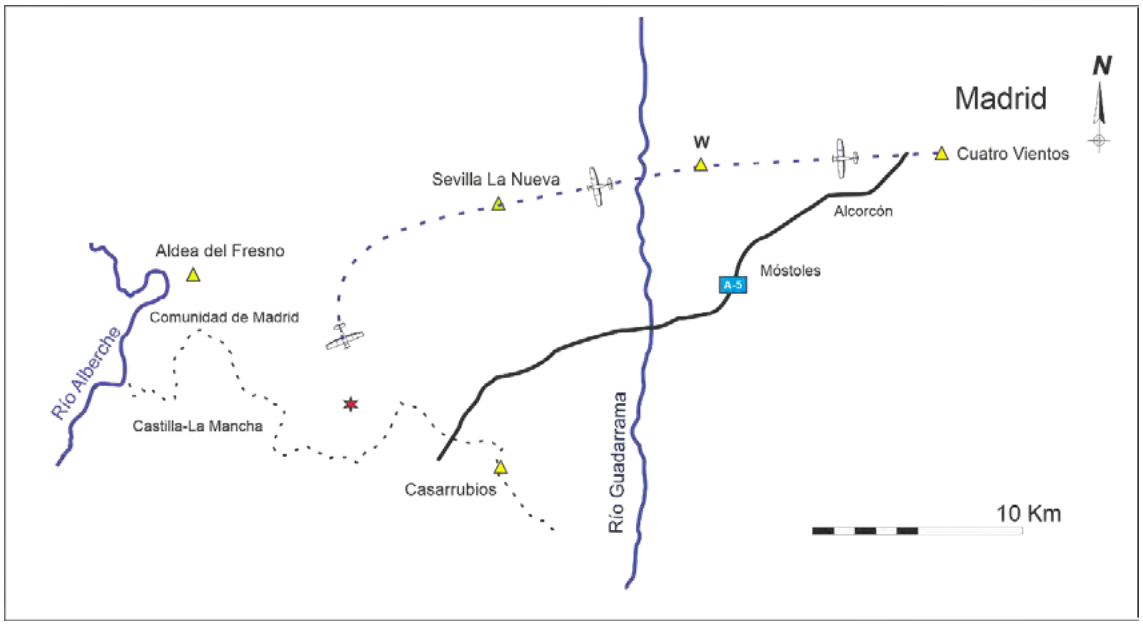

Fig. no. 1 - Aircraft trajectory and location sketch

Just before they reached the aforementioned town, the revolutions dropped from 2300 to 2000/2100 rpm, which was sufficient to maintain the flight line at a lower speed. The instructor took control of the aircraft, put the heating on the carburettor and, as a precaution, headed towards the Casarrubios del Monte aerodrome.

On route, the engine suffered a second loss of power, from 2100 rpm to 1500 rpm, which meant they could no longer maintain the flight line.

The pilot then decided to set glide speed and look for the most suitable terrain for an emergency landing. Once located, given their low 2600 ft altitude and low airspeed, he decided to take the heating off the carburettor to obtain the extra power they would need to make it to the selected field.

After securing the cabin, they made contact with the ground and the aircraft eventually flipped over.

Both occupants were able to exit the aircraft without assistance.

1.2. Injuries to persons

Injuries	Crew	Passengers	Total in the aricraft	Other
Fatalities				
Serious	1		1	
Minor				
None	1		1	N/A
TOTAL	2		2	N/A

1.3. Damage to the aircraft

The aircraft incurred significant damage to the wings, tail assembly, nose gear leg and the area around the engine, including the propeller.

1.4. Other damage

There was no other damage.

1.5. Personnel information

The 38-year-old Spanish instructor had a commercial pilot license (CPL(A)) issued by Spain's National Aviation Safety Agency (AESA) with the following ratings: multi-engine (MEP) valid until 31 May 2020; single-engine (SEP) valid until 30 April 2021; Embraer 170, valid until 31 January 2020; instrumental flight (IR(A)) valid until 31 January 2020; flight instructor (FI(A)) PPL CPL SEP MEP FI, valid until 31 May 2020 and class rating instructor CRI(A) MEP, valid until 31 May 2020.

He also had class II and LAPL medical certificates, valid and in force until 24 July 2024 and a class I medical certificate, valid and in force until 24 July 2020.

His total flight experience was 1477 hours, of which 935 hours were as an instructor and 250 hours were in the same type of aircraft.

The 26-year-old Spanish student had class II and LAPL medical certificates valid and in force until 1 July 2024. He started the PPL(A) course in October 2018 and had completed 20 hours of training at the time of the accident.

1.6. Aircraft information

The aircraft involved in the incident was a CESSNA FRA 150 M model fitted with a single Rolls Royce O-240-E engine. It has a two-bladed propeller, tricycle landing gear and a maximum take-off weight of 750 Kg. It was manufactured in 1975 with serial number 0271. At the time of the accident, the airframe had 5622:30 hours, and the engine had 1249:50 hours of operation.

It had an Airworthiness Review Certificate, issued by the continuing airworthiness management organisation AVIATION VIP, S.L., approval reference E.S. M.G. 181, effective until 28 April 2020.

The last maintenance overhaul carried out on the aircraft and engine was the 50-hour inspection, which took place on 27 December 2019 (as per the corresponding service manuals) when the aircraft and engine had 5589:30 and 1217:15 flight hours, respectively.

The aircraft's insurance policy was valid until 22 June 2020.

According to the cargo manifest and aircraft performance data, its centre of gravity was within operational limits.

1.7. Meteorological information

The closest weather stations to the accident area available to AEMET are in Villanueva de la Cañada (about 19 km to the northeast), Valdemorillo (about 23 km to the north), and Robledo de Chavela (about 25 km north-northwest). The data recorded at these stations was as follows:

Villanueva de la Cañada: Temperature 0°C, 90% relative humidity and 947.9 hPa of pressure. Average winds of 7 km/h from the northeast with maximum winds of 10 km/h from the same direction.

Valdemorillo: Temperature 0°C, 89% relative humidity, average winds of 4 km/h from the east with maximum winds of 7 km/h from the same direction.

Robledo de Chavela: Temperature -1°C, 89% relative humidity and 934.7 hPa of pressure. Calm air with maximum winds of 2 km/h from the southwest.

The records from Cuatro Vientos Airport, which was the departure airport and the closest at 30 km to the east-northeast, show the following METAR and TAF reports around the time of the accident:

METAR LEVS 140830Z VRB02KT 9000 NSC 01/M01 Q1023 =

METAR from Cuatro Vientos on the 14th at 8:30 Z. Variable wind with a speed of 2 kt. Visibility 9000 m, with no forecast for reduced visibility. Temperature 1°C. Dew point -1°C. QNH 1023 HPa.

METAR LEVS 140900Z VRB01KT 9000 NSC 02/M01 Q1023 =

METAR from Cuatro Vientos on the 14th at 09:00 Z. Variable wind with a speed of 1 kt. Visibility 9000 m, with no forecast for reduced visibility. Temperature 2°C. Dew point -1°C. QNH 1023 HPa.

METAR LEVS 140930Z VRB02KT 9000 NSC 03/M00 Q1023 =

METAR from Cuatro Vientos on the 14th at 09:30 Z. Variable wind with a speed of 2 kt. Visibility 9000 m, with no forecast for reduced visibility. Temperature 3°C. Dew point 0°C. QNH 1023 HPa.

TAF LEVS 140800Z 1409/1418 VRB04KT 9999 SCT020 PROB30 TEMPO 1409/1418 BKN012 PROB30 TEMPO 1412/1418 20010KT=

TAFOR from Cuatro Vientos on the 14th at 8:00 Z. Valid from 9:00 Z on the 14th to 18:00 Z on the 14th. Variable 4 kt wind. Visibility more than 10 km. Scattered clouds at 2000 ft. 30% probability of temporary dense cloud cover between 09:00 Z and 18:00 Z on the 14th. 30% probability of a temporary 10 kt wind from 200°, between 12:00 Z and 18:00 Z on the 14th.

1.8. Aids to navigation

N/A.

1.9. Communications

During the flight, the aircraft was in contact with the control tower at Cuatro Vientos Airport.

The pilot did not declare an emergency during the flight.

Once outside the aircraft, the pilot called the ARO office at Cuatro Vientos Airport to report the incident and activate the corresponding procedures.

1.10. Aerodrome information

N/A.

1.11. Flight recorders

The aircraft was not equipped with a flight data recorder or voice recorder. The applicable aeronautical regulations do not require the installation of any type of recorder for this type of aircraft.

1.12. Aircraft wreckage and impact information

The aircraft was found in an inverted position in a ploughed field in the municipality of Villamanta (Madrid), GPS coordinates 40º15'42.48" N 004º6'38.991" W.

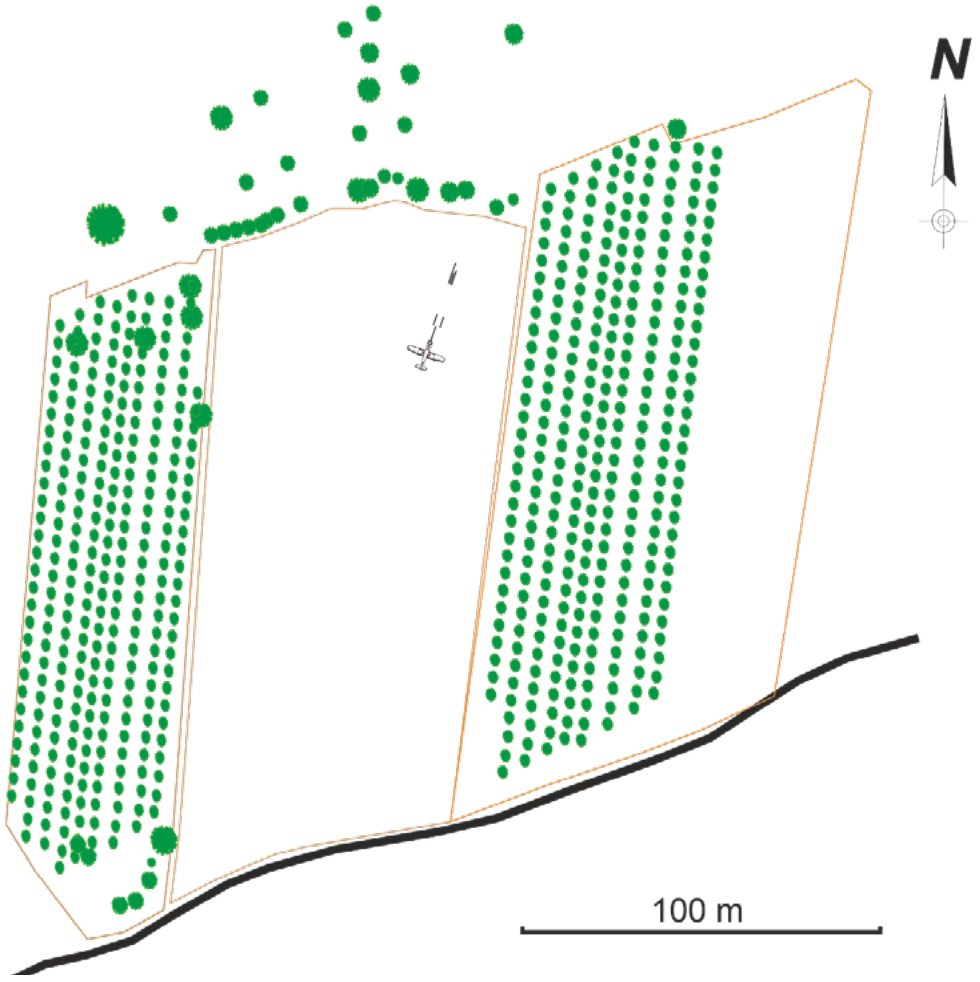

Fig. no. 2 - Sketch of the landing area

The rectangular field is approximately 175 m long and delimited at the first end (according to the direction of the landing), by a trough formed by its intersection with the negatively sloped field immediately before it, and at the far end by a country road.

The terrain was inclined in the approach direction and sufficiently compact for landing the aircraft. The trough end had irregular vegetation consisting of medium/tall bushes.

Three parallel track marks could be distinguished, slightly deviated to the right with respect to the orientation of the field and with 1.7 m between the left track mark (3.80 m long) and the centre track mark (3 m long), and 0.9 m between the centre track mark and the right track mark (5.60 m long). The tracks started approximately 24 m from the start of the field (right track mark first).

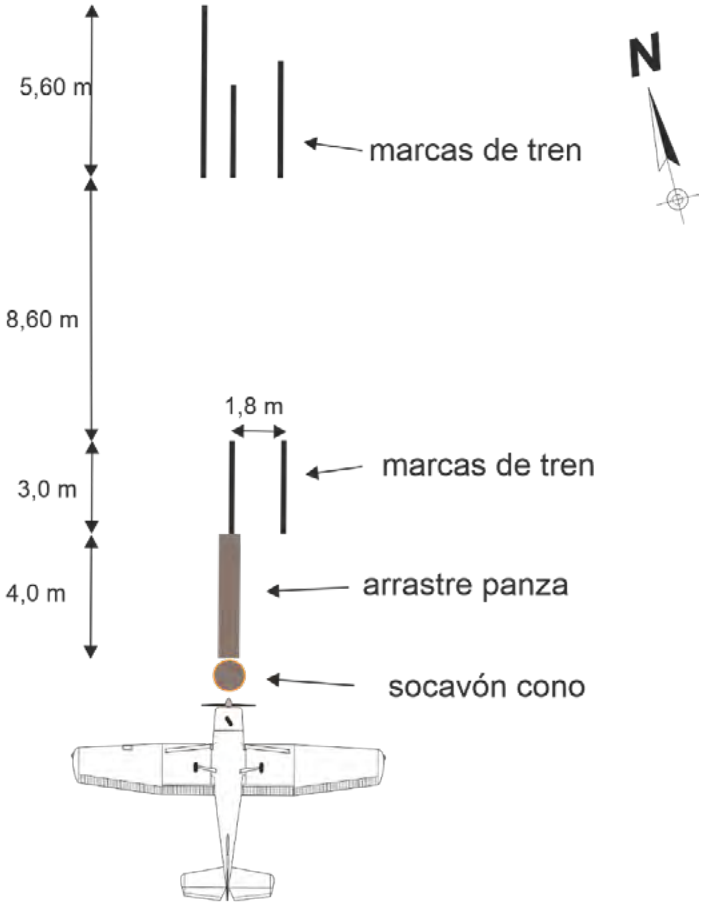

Fig. no. 3 - Detail of the track marks

At 8.6 m from the end of the first tracks, there was another set of two track marks, parallel both to each other and the previous ones, 3 m long and 1.8 m apart.

After those, there was a single wider track mark, parallel to the others and 4 m in length, which ended with a wide, shallow hollow. The aircraft was found 1 metre from the last track mark in an inverted position, with its nose pointing back towards the other track marks.

The aircraft's nose leg had broken off at the engine mount and was behind and slightly to the left. The main landing gear was undamaged, although the footboard on the left leg displayed traces of mud.

Fig. no. 4 - Aircraft in its final position

The propeller cone was intact, as were both of its blades, although one of them was bent back towards the aircraft.

The cowling was open as the firefighters had disconnected the battery.

The engine mount was broken at two points on the left side, where the nose leg attaches.

At first glance, the engine didn't appear to be leaking oil or fuel, despite being upside down. It was preserved for subsequent analysis.

The tip of the right wing had a dent on its leading edge, the ailerons were moving freely, and the flap was deployed.

The fuselage was in good condition, with no dents on either side.

The elevator was also undamaged and moved freely.

The tip of the rudder was deformed, and the anti-collision light had detached (although still attached by its wires) and was embedded in the ground.

The left wing had a few creases on its underside, close to where it attaches to the fuselage. The aileron was moving freely, and the flap was deployed.

Inside the cockpit, the master was off, the magnetos disconnected, and all the lights were off.

The throttle lever was at idle, and the mixture lever was in the off position. The flap selection indicator read zero.

1.13. Medical and pathological information

N/A.

1.14. Fire

There was no fire.

1.15. Survival aspects

Approximately 35 minutes after the event, Civil Guard units, a basic assistance ambulance, a fire brigade helicopter and the emergency helicopter that evacuated the student to a hospital were at the scene of the accident.

The seats were in position, and the seatbelts were in good condition. The passenger cabin did not have any obvious deformations. It had maintained its shape, which helped to protect the occupants.

1.16. Tests and research

1.16.1. Engine inspection

A detailed engine inspection was carried out, which included an examination of the ignition point, air intake box, filters, spark plug ignition ramps, intake/exhaust valves, cylinder airtightness and checking the magnetos.

The inspection did not identify any anomalies and we concluded, therefore, that the condition of the engine did not trigger the power loss.

1.16.2. Testimony of the crew

The crew members have provided us with their account of the events, from which we would highlight the following factors:

- They had scheduled a local training flight that was to consist of performing straight and level flight and, in particular, reviewing the use of the compensator.

- At 8:30 h, the student was in the ARO office submitting the flight plan, checking for NOTAM and consulting the meteorological information.

- At 9:00 h, they carried out the pre-flight inspection, checking surfaces (the frost on windows and wings had to be removed), draining wings, checking oil and draining the engine. The aircraft was refuelled, and they re-checked the plugs and drained them again. They didn't find water in any drainage point.

- They started the engines at 9:20 h. After listening to the ATIS, as the engine temperature was still low, they waited a while and then called the Tower, who directed them to the holding point on runway 27 by A4. They had to wait for around 20 minutes because there were several aircraft queuing ahead of them. They took advantage of the time to go over the take-off and emergency briefings. When they were at the holding point and the engine was warm enough, they carried out an engine test. It maintained the correct parameters.

- At 9:45 h, they were cleared to take off on runway 27, and after point W, they proceeded to Sevilla la Nueva, ascending to 3500 ft. Later, they continued towards Aldea del Fresno maintaining altitude because other traffic in the area had notified their position at 4000 and 4500 ft.

- Shortly before reaching Aldea del Fresno, the student realised that he had lost 100 ft in height, so he decided to add power to recover the altitude. It was then that they realised they had lost power because they couldn't get any more than 2100 rpm out of the engine and could hear backfiring noises. They maintained the flight line but at a lower speed.

- At that moment, the instructor took control of the aircraft, deciding to return and putting the heating on the carburettor.

- They contacted the company on the air-to-air frequency to let them know they had a problem and needed to land. They also informed the Tower at Cuatro Vientos. Moments later, realising they couldn't reach LECU, they changed course to head towards Casarrubios Aerodrome for a long final to runway 08.

- During this stage of the flight, the aircraft vibrated a lot and the engine experienced a second power loss, from 2100 to 1500 rpm, which made it impossible to maintain the flight line, so the instructor maintained a glide speed of 55/60 kt and decided to look for a suitable place to make an emergency landing, despite the uneven terrain and the presence of power lines.

He selected 7500 in the transponder and initially extended the flaps fully, although on seeing that they were flying too low he retracted them again. Since they were running very short of speed (55/50 kt) and at an altitude of 2,600 ft, he turned off the carburettor heater for an extra boost of power to help them reach the chosen terrain.

- Before landing, he secured the cabin according to the procedure in the manual. For safety, he didn't extend the flaps since their height above the obstacles in front of the chosen landing site was excessively low, as was their speed of 50 kt. The speed at the moment of impact at 10:10 h was 40/45 kt.

- After the impact, the instructor unbuckled his harness, exited the aircraft and helped the student out.

Later, at 10:14 h, he called the ARO office at Cuatro Vientos to activate the protocol and provide the coordinates for the rescue teams.

- After confirming no fire or smoke was coming from the aircraft... they returned to collect its documents, their briefcases and the first-aid kit.

1.17. Organisational and management information

N/A.

1.18. Additional information

1.18.1. Ice formation on the carburettor

Aside from ice build-up on elements of the intake system that are at or below 0°C, ice accumulation on the carburettor induction system, including the butterfly valve, is also common.

The carburettor induction system is subject to two cooling processes. Firstly, the fuel vaporisation process (which absorbs heat from the air reducing its temperature), and secondly, the decrease in temperature caused by the venturi effect, resulting from the increase in airspeed and the consequent decline in pressure.

The temperature can drop as much as 30° below that of the intake air. If the temperature in the carburettor falls below 0°C, under certain atmospheric humidity conditions, the water particles in the intake air precipitate in the form of ice, usually on the walls of the carburettor close to the fuel discharge nozzle and on the butterfly valve.

Even in minute quantities, ice accumulation can restrict the air intake to the carburettor or the fuel discharge, causing a loss of power or even shutting down the engine entirely if the issue isn't corrected in time.

In a fixed-pitch propeller engine, the effect produced by the presence of ice on the carburettor manifests in the form of a gradual decrease in engine revolutions, followed by turbulent and irregular engine performance and, finally, the complete halt of the engine.

1.18.2. Procedure for an emergency landing without power

According to the Emergency Procedures section of the aircraft's flight manual, in an emergency landing without power, the following steps must be followed:

- Speed 65 kt (flaps UP), 57 kt (flaps DOWN)
- Mixture - Idle cut-off
- Fuel shut-off valve- OFF
- Ignition switch- OFF
- Flaps- As required (40° recommended)
- Master switch - OFF
- Doors- Unlatch prior to touchdown.
- Touchdown- Slightly tail low
- Brakes- Apply heavily

1.19. Useful or effective investigation techniques

N/A.

2. ANALYSIS

2.1. General aspects

According to the documentation provided, the crew were in possession of the relevant licenses and medical certificates required for the flight.

The aircraft also had the correct documentation for the flight.

The take-off weight of the aircraft was within the operational limits specified by the flight manual.

2.2. Of the meteorological conditions

The data recorded at different meteorological stations in the area confirms non-limiting meteorological conditions for the flight.

2.3. Of the wreckage

The aircraft followed an approach path that deviated slightly to the right (with respect to the orientation of the field) to avoid flying over the tallest vegetation at its front edge and thus be able to take advantage of the maximum distance for roll-out after touchdown.

The track marks on the ground were made by the landing gear, with the right main gear leg making contact first and rolling 1.8 m before the left main gear wheel and nose leg also made contact.

After having rolled for three metres on the entire landing gear, the absence of track marks indicates that the aircraft bounced into the air again for another 8.60 m.

Subsequently, it made contact with the ground again, this time with the nose leg first and then with the left leg, rolling for three metres until the point where, after the nose gear leg collapsed, the underside of the aircraft made a wide, 4 m-long track mark as it dragged along the ground.

Next, the propeller bushing embedded into the ground, causing the aircraft to flip over and leaving a large hollow in the Earth.

Therefore, we have determined that the landing was inadequate because although the aircraft initially touched down with the main gear and dropped the nose wheel a few metres on, it then bounced back into the air (suggesting excessive speed on touchdown).

When it made contact with the ground for a second time, it did so in an unstable manner because the initial contact was made with the nose leg (which eventually collapsed) and then followed by the left leg, suggesting the aircraft was pitched incorrectly.

The effect of having bounced into the air again could have induced the pilot to act on the controls in an attempt to make the aircraft return to the ground, causing it to adopt a slightly nose-down attitude.

The propeller blades were intact, although one of them was bent backwards, which indicates input without power and deformation due to the blade making contact with the ground.

The minor damages to the rudder (bent at the tip) and wings (creases on the left wing and a dent on the leading edge of the right wing) were caused by the aircraft impacting the ground.

2.4. Of the engine condition

Based on the results of the engine inspection, we can state that its condition was not a factor in its irregular behaviour.

2.5. Of the operation

The flight passed without incidence at an altitude of 3500 ft until the pilot noticed a loss of power that he could not recover.

An engine power loss can be caused by various factors, including a lack of fuel, a malfunction in the engine or the magnetos, or problems with the fuel circuit.

According to the documentation provided and the crew's testimony, the aircraft was refuelled before starting the flight.

As indicated previously, a detailed inspection of the engine and the magnetos failed to identify any causal relationship between their condition and the irregular behaviour of the engine.

The last potential factor would be a lack of air in the carburettor. Ice build-up can obstruct the air intake to the carburettor or the fuel discharge, causing the engine to lose power or stall.

The two most important conditions to keep in mind with regard to the potential for ice to form on the carburettor are air temperature and relative humidity.

The ambient air temperature is important, but it doesn't have to be below 0°C, or close to the freezing point; ice can form even in a relatively warm environment (between -5 ° C and 30°C).

Relative humidity is the most important factor, with ice on the carburettor being considered possible with anything above 30% humidity.

The higher the water content in the atmosphere, the greater the risk of ice forming on the carburettor. On dry days or when the temperature is well below freezing, the humidity in the air doesn't usually cause ice on the carburettor, but if the temperature is between -5°C and 30°C and the relative humidity is high, pilots must take the necessary precautions to stop it from forming.

According to the meteorological data recorded in the METAR from Cuatro Vientos Airport at the time of the accident, the ambient temperature was 2°C, and the dew point was -1°C. The graph below shows that the conditions were favourable for the formation of ice on the carburettor.

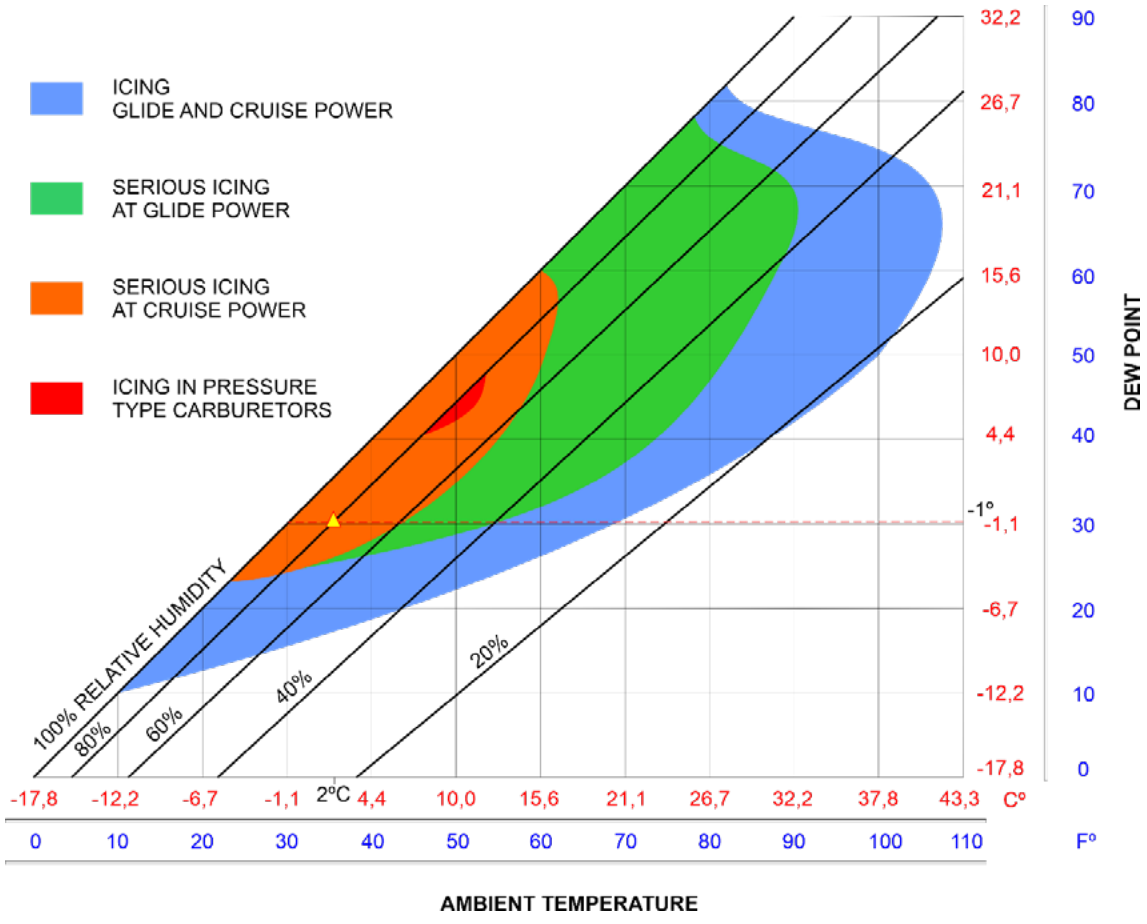

Fig. no. 5 - Table indicating the probability of the presence of ice in the carburettor

We can also see that if we transfer the data from the closest meteorological stations mentioned in the AEMET report, which show temperatures of 0°C and -1°C, and relative humidity between 89% and 95%, we always end up in the 'serious icing at cruise power' zone.

Carburettors are equipped with heaters to prevent ice from forming or eliminate ice that may have already developed. When selecting the carburettor heating, the pilot changes the air inlet from the normal duct (with filter) to another (without filter) that uses the heat from the exhaust manifold to heat the air. This hot air should melt the ice in the carburettor and keep the temperature above freezing.

The instructor indicated that when they noticed the initial drop in rpm from 2300 rpm to 2100 rpm, they switched on the carburettor heater in case of ice formation. However, given their low altitude, how quickly they lost more power and height and the ruggedness of the terrain, he finally decided to switch off the carburettor heating to obtain enough power to reach the selected landing site.

Therefore, the pilot switched on the carburettor heating in an attempt to restore power but then switched it off when it didn't immediately work because of the small window of opportunity they had to land in the identified location.

Obviously, not being able to maintain the carburettor heating for a long time meant that there was no time for it to improve the situation.

The pilot may have been unaware that the weather conditions that day were conducive to ice formation, and possibly, the accident could have been avoided if he had kept the carburettor heater on throughout the cruise.

Furthermore, the pilot indicated that due to their low speed and height over the obstacles in the area immediately before the chosen landing site, he avoided extending the flaps so as not to jeopardise their chances of reaching it because failing to do so would have had far more severe consequences.

Therefore, there was a point when the compromised situation limited the pilot's ability to act.

3. CONCLUSIONS

3.1. Confirmed findings

The pilot held the required license and relevant medical certificates for the flight.

The aircraft had the corresponding documentation for the flight.

There were no limiting meteorological conditions for visual flight.

The aircraft was flying in a 'serious icing at cruise power' zone.

The pilot carried out the emergency procedure.

3.2. Causes/contributing factors

The accident occurred as a consequence of making an emergency off-airfield landing due to a loss of engine power.

Inadequate flight preparation and the fact that the pilot did not have the heater connected to the carburettor while flying in conditions conducive to ice formation are believed to be contributing factors.

4. OPERATIONAL SAFETY RECOMMENDATIONS

None.

5. APPENDICES

None.