

CIAIAC

Comisión de Investigación
de Accidentes e Incidentes
de Aviación Civil

TECHNICAL REPORT

A-014/2000

Accident suffered by the
aircraft MOONEY M20K,
registration G-GTPL,
in Font de Corts,
Montseny Massif,
municipal district of
Gualba (Barcelona),
on 27 May 2000



MINISTERIO
DE FOMENTO

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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 and its causes and consequences.

In accordance with the provisions of Law 21/2003 and Annex 13 to the Convention on International Civil Aviation, the investigation has exclusively a technical nature, without having been targeted at the declaration or assignment of blame or liability. The investigation has been carried out without having necessarily used legal evidence procedures and with no other basic aim than preventing future accidents.

Consequently, any use of this report for purposes other than that of preventing future accidents may lead to erroneous conclusions or interpretations.

This report has originally been issued in Spanish language. This English translation is provided for information purposes only.

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Abbreviations

00 °C	Degrees centigrade
00° 00' 00"	Degrees, minutes and seconds
ADF	Automatic direction finder
AMA	Aeronautical Meteorological Autoservice
ATC	Control de Tránsito Aéreo
ATZ	Aerodrome traffic zone
DME	Distance measuring equipment
CFIT	Controlled flight into terrain
E	East
FIR	Flight information region
ft	Feet
hh:mm:ss	Time expressed in hours, minutes and seconds
ILS	Instrument landing system
INM	National Institute of Meteorology
GPV	«Grupo de Predicción y Vigilancia»
h	Hours
HP	Horse power
km	Kilometres
kt	Knots
lb	Pounds
m	Metres
min	Minutes
MHz	Megahertz
MTOW	Maximum takeoff weight
N	North
NDB	Non directional beacon
NE	Northeast
NM	Nautical miles
QNH	Altimeter sub-scale setting to make it to indicate the altitude of the airport above mean sea level during takeoff and landing
RCA	Reglamento de Circulación Aérea
UTC	Coordinated Universal Time
VFR	Visual flight rules
VHF	Very high frequency
VOR	VHF omnidirectional radio range

1. FACTUAL INFORMATION

1.1. History of the flight

According to the Flight Plan submitted, on the day of the accident, 27 May 2000, the aircraft of the make Mooney, model M20K, registration G-GTPL, planned to make a private flight under VFR rules from the airport of Murcia/San Javier to that of Perpignan (France), as a first stage towards its final destination in the United Kingdom. According to the Flight Plan, the planned cruising speed was 150 kt, flight level corresponding to VFR, estimated duration of the flight two and a half hours, and a fuel load for five hours of endurance.

The aircraft took off from the airport of Murcia/San Javier at 8:32 h¹ with the pilot as the sole occupant and meteorological conditions suitable for VFR flying.

At 10:25:26 h the pilot established contact with the control tower of Sabadell airport, indicating that he was leaving the ATZ (aerodrome traffic zone) of Sabadell by the north-east (NE) at a height of 3,500 feet QNH and reporting that he was preparing to descend in order to maintain visual contact with the ground.

This was the last communication with the aircraft, although the radio operator of the Sabadell control tower believes he recalls receiving a call from the aircraft five minutes later but without understanding it: consequently he instructed the pilot to contact him on 125.5 MHz but obtained no reply.

The last radar contact with the aircraft is available, at 10:37:45 h. This contact situates it in radial 231 of the VOR of Gerona, at a distance of approximately 29.5 km (15.9 NM), at a flying height of 3,000 feet and climbing, according to the radar indication.

Subsequently, as the pre-established time had passed without news of the aircraft, Perpignan Airport activated alert procedures and an air search was commenced for the aircraft.

The wreckage was located the following morning in the Montseny Massif, at latitude 41° 45' 55" N and longitude 02° 29' 13" E, in Font de Corts, municipal district of Gualba (Barcelona).

The aircraft had struck the ground in a mountainous zone of difficult access, situated at a height of 950 metres (3,117 feet). The aircraft was completely destroyed and its occupant was found dead.

It is estimated that the accident occurred at around 10:40 h.

¹ Time reference in this report is Coordinated Universal Time (UTC) unless otherwise stated.

1.2. Injuries to persons

Injuries	Fatal	Serious	Minor/none
Crew	1		
Passengers			
Others			

1.3. Damage to aircraft

As a consequence of the impact with the ground, the aircraft was completely destroyed and irrecoverable.

1.4. Other damage

Except for slight damage to the trees, no appreciable collateral damage was caused by the accident.

1.5. Personnel information

1.5.1. Pilot

Age/sex:	71 years, male
Nationality:	British
Licence:	Private pilot's licence n° 1517 A
Ratings:	Unknown
Medical examination:	The date of the last examination was 12 January 1999, valid for 6 months. The pilot was required to use graduated spectacles and carry a spare pair
Flying experience:	Not available

1.6. Aircraft information

The aircraft Mooney M20K is a single-engined low-wing aircraft with low tail and tri-cycle landing gear. It is well known and commonly used in general aviation.

Between the M20K 231 and 252 models, which are practically identical and the latter of which is the precursor of the popular M20M «Bravo», more than 1,120 units have been built since 1979.

Initially the aircraft in question, registration G-GTPL, was equipped with a McCauley 2A 2HC 216 propeller, but on 7 June 1998 it was refitted with a Hartzell PHC-J3YF-1RF/F7663A-2R propeller.

1.6.1. *Airframe*

Make:	Mooney Aircraft Corp.
Model:	M20K 231
Serial number:	25-0301
Registration:	G-GTPL
MTOW:	2,900 lb, equivalent to 1,315 kg
Owner:	Private
Operator:	Private

1.6.2. *Certificate of airworthiness*

Number:	007455/002
Type:	Private
Date of issue:	28-06-1998
Date of expiry:	27-06-2001

1.6.3. *Maintenance log*

Total flying hours:	1,239 hours, 5 min as of 13-05-2000
Last annual inspection:	09-07-1999
Hours since last annual insp.:	34 hours, 40 min as of 13-05-2000

1.6.4. *Engine*

Make:	Continental
Model:	TS10-360-GB1
Power:	210 HP
Serial number:	309319
Last annual inspection:	09-07-1999

1.7. Meteorological information

The meteorological conditions in the airport of origin were suitable for VFR flying at the moment of departure.

The forecasts for low levels (up to FL150) for the FIR of Barcelona between 09:00 and 15:00 h announced an anticyclone of 1,020 hectopascals, weakening, with isolated storms over the Balearic Islands, mountains obscured by clouds over the Pyrenees and winds of 1 to 8 kt between levels FL20 and FL50.

However, these conditions gradually worsened during the course of the flight, and in the communication with the aircraft at 10:25:26 h the pilot reported that his flight level was 3,500 feet and he was preparing to descend to maintain visual contact with the ground.

The meteorological information of the Montseny Meteorological Observatory, close to the accident site, at 7:00 h and 12:00 h, showed wind 260°/10-18 kts, fog, temperature 9-9.4 °C, 100% humidity and rain at the observation times, with precipitation of 1.2 litres in this period.

As has been stated, the accident occurred at a height of 950 m (3,117 feet).

1.8. Aids to navigation

The Aircraft Station Licence indicates the installation of a King KR87 ADF unit, a King KNS80 DME-Area Navigator unit, a King KN53 VOR/ILS unit, a King KMA24 beacon receiver and a King KT76A ATC transponder with mode C (height) incorporated. The Licence also includes an RCA Weather Scout 1 weather radar unit.

1.9. Communications

The Aircraft Station Licence includes the installation of two King KY197 VHF communications units.

Although this equipment was used by the pilot during both take-off and flight, according to the communication with the control tower of Sabadell airport described earlier, no help or emergency call was detected from the aircraft, although, as has been said, the Sabadell radio operator believes he recalls receiving a later call from the aircraft which he did not understand, as a result of which he requested the pilot to change to frequency 125.5 MHz, but without results.

1.10. Wreckage and impact information

The wreckage of the aircraft was found grouped together in a radius of approximately 25 metres, tangled with the vegetation, the fuselage being held up by the trees and the nose embedded in some rocks in which the impact of the aircraft was located. The engine was displaced to the right and the propeller two metres in front of the aircraft, at a higher level, with one of its blades embedded in the ground.

The right wing had broken off the fuselage, while the left wing, although badly damaged, remained connected to it.

From the visual inspection of the distribution of the wreckage and the traces observed in the vegetation surrounding the accident site, it can be deduced that the aircraft scraped the tops of the trees in a climbing direction and its right wing struck a tree larger than the rest. This impact caused the wing to break off and the aircraft to change direction abruptly, the nose colliding with the rock and the propeller breaking and splitting off (see photographs of the wreckage in Appendix A).

1.11. Medical and pathological information

The occupant of the aircraft died as a result of the deceleration traumatism he suffered in the impact of the aircraft with the ground.

1.12. Survival aspects

In view of the characteristics of the accident and of the impact with the ground, the sole occupant of the aircraft had practically no possibility of survival.

1.13. Tests and research

1.13.1. *Radar contact*

As stated earlier, only one radar contact with the aircraft is registered, made at 10:37:45 h.

In this contact, the approximate situation of the aircraft was in radial 231 of the VOR of Gerona, at a distance of 29.5 km (15.9 NM), 3,000 feet height and climbing, with a registered radar speed of 80 kt (see figure in Appendix A).

1.13.2. *Planning of the flight*

According to the information compiled from the meteorological office of Murcia Airport, there is no record of the pilot reporting to this office to request the meteorological information that would enable him to plan the flight fully and appropriately.

In general, in airports associated with military bases, the meteorological offices are situated in the zone under the control of the military authorities. Civilian crews need authorisation to enter these zones. The formalities for obtaining this permission have to be carried out in advance.

1.14. **Additional information**

Regarding the information provided in the last paragraph of Section 1.13.2, it is necessary to mention that, in year 2004, the meteorological offices of the military Air Bases open to civil air traffic are directly connected with the Operations Offices of the civil facilities of the Base. Therefore, civil pilots may access the relevant weather information to prepare their flights by phone, fax and remote terminals relaying the information of the terminals at the Meteorological Offices.

On the other hand, the National Institute of Meteorology (INM), which is the provider of meteorological services to the aviation in Spain, has developed a computer tool called «Aeronautical Meteorological Autoservice» (AMA) through which any aviation user may access by internet all the necessary information for pre-flight purposes by internet. This tool is in service since year 2003. In addition, the INM has several regional «Grupos de Predicción y Vigilancia» (GPV) in Spain, and any information not available through AMA may be consulted to them by phone.

2. ANALYSIS

2.1. Progress of the flight

According to its Flight Plan, the aircraft make Mooney, model M20K, registration G-GTPL, took off from the Airport of Murcia-San Javier with one sole occupant at around 8:30 h on 27 May 2000, to carry out a general non-commercial VFR flight to the airport of Perpignan (France). As indicated above, there is no record of the pilot collecting meteorological information in order to prepare the Flight Plan.

The planned speed was 150 kt, flight level corresponding to VFR and estimated duration of the flight two and a half hours. The endurance of the aircraft, according to its Flight Plan, was five hours.

The only communication from the aircraft registered during the flight corresponds to 10:25:26 h with the control tower of Sabadell airport. In this contact, the pilot indicated that he was leaving the ATZ of Sabadell by the NE at a height of 3,500 feet QNH and was about to descend to maintain visual contact with the ground.

Subsequently, in addition to a possible call which the operator of the control tower of Sabadell airport believes he recalls but did not understand, there is a radar contact at 10:37:45 h, situating the aircraft at some 29.5 km (15.9 NM) from the VOR of Gerona in radial 231 and climbing from a height of 3,000 feet at a speed of 80 kt.

The wreckage of the aircraft, completely destroyed, and the dead body of the pilot were found the following morning in the Montseny Massif at latitude 41° 45' 55" N and longitude 02° 29' 13" E, in a mountainous zone of difficult access, situated at a height of 950 m (3,117 feet).

2.2. Considerations on the accident

Given the position in which the wreckage was found, the position indicated by the pilot in his last registered radio communication (leaving the ATZ of Sabadell by the NE), the position defined in the radar contact and the speed of 80 kt and climbing indicated in this contact, it is estimated that the accident must have occurred a few minutes after 10:37 h.

With this hypothesis, a total failure of communications in the time between the last connection and the accident is considered very improbable, as a result of which, as there is no evidence of any attempt at emergency communication from the aircraft, it is assumed that no failure became evident to the pilot during this time.

The evolution of the flight, as stated earlier, suggests that the operation of the aircraft was a descent begun from 3,500 feet, according to the radio communication, entering a mountainous zone with fog, according to the information of the Montseny Meteorological Observatory, and therefore with low visibility. The meteorological phenomenon is considered local and unpredictable, since the forecasts, which in any case were unknown to the pilot, indicated only mountains obscured by clouds over the Pyrenees above 6,000 feet.

Either in response to the navigation information or on seeing the height of the ground over which he was flying, with mountains and zones higher than 3,000 feet, the pilot began a climbing manoeuvre, as is detected in the radar contact and the investigation carried out at the accident site, which, possibly, he was unable to complete, scraping the tops of the trees and striking the ground at a height of 950 m (3,117 feet).

This accident can be catalogued among those known as the CFIT type (Controlled Flight Into Terrain), which occur when an otherwise airworthy aircraft is unintentionally flown into the ground under the control of the crew.

2.3. Availability of the meteorological information

There is no evidence that the pilot collected the weather information necessary for pre-flight planning. It is possible that the pilot only asked for the information available in the Operations Office located in the civil zone of the airport, or maybe that he did not ask for any weather information. In any case, as mentioned in section 1.14, the available means to access meteorological information in the military air bases open to civil traffic in Spain by the end of 2004 have increased with respect to the ones available at the time of the accident, and it is considered that those means allow an adequate access to the data necessary to plan the flight.

3. CONCLUSION

3.1. Findings

- The pilot held a valid licence for the type of flight he was carrying out. However, it is considered that it was not in force, because the period of validity of the medical examination had been exceeded by ten months and 15 days on the date of the accident.
- The aircraft held a current Airworthiness Certificate on the date of the accident.
- The flight had been commenced in meteorological conditions suitable for flying under VFR rules.
- The corresponding Flight Plan had been prepared and communicated via the ordinary channels.
- There is no record of the pilot requesting meteorological information on the route in planning the flight.
- At Murcia Airport, which has joint military and civilian use, civilian crews require authorisation to enter the meteorological office.
- In a descent from 3,500 feet to maintain visual contact with the ground, the aircraft entered a mountainous area with fog, and therefore with low visibility, striking the ground at a height of 950 metres (3,117 feet) and causing the complete destruction of the aircraft and the death of the occupant.

3.2. Causes

It is considered that the accident was of the CFIT type (Controlled Flight Into Terrain), caused by the aircraft descending from a height of 3,500 feet QNH to maintain visual contact with the ground and flying into fog in a mountainous area. The accident occurred at a height of 950 m (3,117 feet), following a radar contact which indicated that the aircraft was climbing from 3000 feet at a speed of 80 kt.

4. SAFETY RECOMMENDATIONS

None.

APPENDICES

APPENDIX A

Radar track

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