



Aviation Investigation Final Report

Location:	Camarillo, California	Accident Number:	WPR22FA210
Date & Time:	June 10, 2022, 08:00 Local	Registration:	N305L
Aircraft:	MOONEY AIRCRAFT CORP. M20K	Aircraft Damage:	Destroyed
Defining Event:	Loss of control in flight	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The instrument-rated pilot planned to fly to his home base. The departure airport was enveloped in marine layer conditions with low visibility, mist, and clouds tops between 400 and 1,600 ft. The pilot received this weather information during a briefing about 30 minutes before departure, during which he filed an instrument flight rules (IFR) flight plan with a visual flight rules (VFR)-on-top clearance.

The pilot was unfamiliar with the airport. After making a wrong turn, the pilot was given taxi instructions to the departure runway. The engine run-up and takeoff appeared uneventful, and the pilot’s communication with the control tower was routine.

Shortly after takeoff, the airplane likely entered the clouds, and the pilot was instructed to contact the departure controller. Although the pilot acknowledged the instruction, he did not contact the departure controller.

A short time later, a witness who was driving along a freeway parallel to the departure runway saw a low-flying airplane that was traveling perpendicular to the takeoff direction. The airplane did not appear to have any trailing smoke or vapors. The airplane then impacted the ground just past the freeway. A video from the witness’ dashboard-mounted camera captured the flames from the impact and showed the fog and low clouds enveloping the area. The reported weather observations matched the weather conditions observed in both the security camera video and the dashboard camera video.

Engine and propeller evidence and the associated propeller ground scars indicated that the engine was producing high levels of power at impact. The airplane was equipped with conventional vacuum and electrically powered flight instruments. Although the autopilot and

flight instruments were destroyed due to impact and thermal damage, the vacuum pump, which had recently been installed, was recovered and found to be operational. Also, evidence within the wreckage indicated that the airplane was configured appropriately for the initial takeoff climb, with the landing gear retracted and the trim set for takeoff. Thus, the loss of control did not occur due to a loss of engine power, a preimpact mechanical malfunction or failure, or pilot error in configuring the airplane for takeoff.

The pilot's logbook showed only the flight time required to meet Federal Aviation Administration (FAA) currency requirements; and based on his entries, while he had undergone a flight review the year prior, it appeared that he was not instrument current at the time of the accident.

The airport area is provided with radar and automatic dependent surveillance-broadcast (ADS-B) coverage that starts between 250 and 500 ft above ground level (agl), but neither system tracked the airplane. Thus, the airplane likely did not reach an altitude that would allow the airplane to be tracked after it entered the clouds. The pilot was required to make a slight right turn after departure; however, the airplane's rapid change in direction after takeoff along with its high impact speed (as shown by ground scar and video evidence) are consistent with the pilot encountering spatial disorientation in the clouds, resulting in a loss of airplane control. It is possible that the pilot might have been distracted as he configured the airplane for the initial climb and reached over to switch to the departure controller's frequency.

The pilot had cardiovascular disease, including moderate coronary artery disease, an implanted pacemaker/defibrillator, and mitral valve replacement. The pilot's medical certificate had expired 6 years before the accident. In 2019 he began flying under the provisions of BasicMed, which is an alternate way for pilots to fly without holding an FAA medical certificate. The pilot's history of mitral valve replacement would have required a special issuance medical certificate for BasicMed. No such issuance was obtained; therefore the pilot did not possess valid medical certification for the flight.

The pilot's cardiovascular disease was associated with an increased risk of sudden impairment or incapacitating cardiovascular event such as ventricular arrhythmia, heart attack, or stroke. No forensic evidence indicated that such an event occurred. However, such events do not leave reliable autopsy evidence if the event occurs just before death, and no data were available from the pilot's implanted pacemaker/defibrillator. Thus, the investigation was unable to determine if sudden incapacitation or impairment was a factor in this accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's spatial disorientation and loss of airplane control after entering instrument meteorological conditions shortly after takeoff.

Findings

Environmental issues	Clouds - Effect on personnel
Environmental issues	Low ceiling - Effect on personnel
Personnel issues	Aircraft control - Pilot
Personnel issues	Spatial disorientation - Pilot

Factual Information

History of Flight

Takeoff	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On June 10, 2022, about 0800 Pacific daylight time, a Mooney M20K, N305L was destroyed when it was involved in an accident near Camarillo, California. The pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot had flown from his home base of Phoenix Deer Valley Airport (DVT), Phoenix, Arizona, to Camarillo Airport (CMA), Camarillo, California, on the day before the accident, and the accident flight was to be the return trip. The pilot's wife stated that he called her at 0600 on the day of the accident to tell her that he would delay the departure because of cloudy weather.

About 0724 the pilot contacted Leidos Flight Service and requested an abbreviated weather briefing. The briefer stated that a marine layer was present in Camarillo, and the pilot responded that it was "socked in." The pilot requested cloud top information and was provided with a pilot report (PIREP) that indicated 700-ft cloud tops along the coast about 40 miles to the southeast at Los Angeles International Airport, Los Angeles, California, in the adjoining Los Angeles Basin. The pilot responded, "there you go." After receiving information on a local temporary flight restriction, the pilot asked how he should file a VFR-on-top flight plan with the briefer. The briefer stated that he would need to file an IFR flight plan with a VFR-on-top clearance and that they could do it immediately. The weather at the time included calm wind, a visibility of 4 miles, a 300-ft agl overcast ceiling, and mist.

After the flight was plan filed, the pilot contacted the CMA tower controller. The controller provided the pilot with an IFR clearance to DVT with instructions to turn right to 275° after departure for radar vectors, climb and maintain 3,000 ft, and expect 7,000 ft 5 minutes after departure. The pilot replied but omitted the initial 3,000-ft altitude instruction, which was corrected by the controller. About 8 minutes later, the pilot stated that he was ready to taxi the airplane and was given instructions to taxi to runway 26 via taxiways F and A. During the next few minutes, the pilot began to taxi the airplane but appeared to be using taxiway G. The pilot then told the controller that he had not previously departed from CMA, and the controller provided the pilot with amended taxi instructions to the runway 26 run-up area.

About 0758, the airplane was cleared for takeoff; about 90 seconds later, the pilot was instructed to contact the departure controller. The pilot acknowledged the instruction but did not contact the departure controller. About 1 minute later, a controller from the Southern

California Terminal Radar Approach Control called the CMA tower controller and reported that the pilot had not made contact and that the airplane did not appear on radar.

A witness driving along Route 101, a freeway located parallel to and about 0.5 miles north of the departure runway, reported seeing a low flying airplane traveling at a high speed from south to north. The witness stated that the airplane did not appear to have any trailing smoke or vapors and that he could hear the engine operating. The airplane was in a 90° right bank with its belly in view. The airplane then collided with the ground just past the freeway, and a postcrash fire ensued. A video from another witness' dashboard-mounted camera captured the flames and the low clouds and fog enveloping the area.

Pilot Information

Certificate:	Commercial	Age:	68, Male
Airplane Rating(s):	Single-engine land; Single-engine sea	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Unknown
Instrument Rating(s):	Airplane	Second Pilot Present:	
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	None None	Last FAA Medical Exam:	July 15, 2014
Occupational Pilot:	No	Last Flight Review or Equivalent:	May 22, 2021
Flight Time:	(Estimated) 2459.3 hours (Total, all aircraft), 1500 hours (Total, this make and model), 30 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

The pilot's most recent flight review occurred on May 22, 2021. The NTSB's attempts to reach the flight instructor who provided the pilot with his most recent flight review were unsuccessful.

FAA regulations require that for a pilot to act as pilot in command under IFR conditions they must maintain currency by performing and logging within a 6-calendar month period preceding the flight, at least; 6 instrument approaches, holding procedures and tasks, and intercepting and tracking courses through the use of navigational electronic systems. The procedures should be performed in actual weather conditions, or under simulated conditions using a view-limiting device.

The pilot's last logbook showed that he generally documented the specific flights required as part of flight currency and proficiency, such as instrument approaches and flight reviews. The

remaining flight time was entered in block entries covering periods of time that often coincided with engine oil changes.

An entry dated March 31, 2022, indicated the pilot had performed an unknown number of RNAV (area navigation) instrument approaches during a round-trip flight from DVT to Hayward, California. A review of publicly available flight data for the accident airplane revealed that its last eight flights from May 4 to June 9, 2022, were not documented in the pilot's logbook. An entry dated June 6, 2022, noted that the pilot had performed two instrument landing system approaches at Casa Grande Municipal Airport (CGZ), Casa Grande, Arizona.

The first logbook entry, dated July 11, 2012, indicated that the pilot's total previous flight experience was 1,672 hours. The remaining 11 pages showed that the pilot had flown about 787 hours, 80 hours of which were in actual instrument conditions. The logbook had four references to "VFR on top," the last of which occurred in May 2019.

The pilot's most recent FAA medical certification examination was in 2014, and his third-class medical certificate expired in 2016. According to FAA records, the pilot completed a BasicMed Course on May 6, 2019, and reported completing the BasicMed comprehensive medical examination checklist (CMEC) the same day. No CMEC form was found with the pilot's logbook or was otherwise recovered during the investigation. Records were requested from and provided by the physician who the pilot indicated had performed the CMEC examination. These records did not include a CMEC examination or a record of an examination on May 6, 2019. (The FAA does not require a physician to retain records related to a BasicMed examination, and CMEC forms are not routinely submitted to the FAA.)

The pilot's wife stated that he had previously flown in actual instrument conditions and that he might have flown in such conditions during a trip to Alameda, California, in February 2022. She stated that he had no appointments, meetings, or compelling reason to return home on the day of the accident.

Aircraft and Owner/Operator Information

Aircraft Make:	MOONEY AIRCRAFT CORP.	Registration:	N305L
Model/Series:	M20K	Aircraft Category:	Airplane
Year of Manufacture:	1981	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	25-0616
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	December 8, 2021 Annual	Certified Max Gross Wt.:	3017 lbs
Time Since Last Inspection:	50 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	3336.14 Hrs as of last inspection	Engine Manufacturer:	Continental Motors
ELT:	C126 installed, activated, did not aid in locating accident	Engine Model/Series:	TSIO-520-NB17B
Registered Owner:	305L AIR HOLDINGS LLC	Rated Power:	225 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

FAA records indicated that the pilot purchased the airplane in 2006.

The airplane was fueled to capacity at a CMA fixed-base operator shortly after the airplane landed on the day before the accident. The fuel supplier tested the fuel after the accident, which yielded nominal results.

The airplane was equipped with an autopilot. The roll servo was repaired on March 11, 2021. and an overhauled vacuum pump was installed on March 8, 2022.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	Condition of Light:	Day
Observation Facility, Elevation:	KCMA, 71 ft msl	Distance from Accident Site:	2 Nautical Miles
Observation Time:	07:55 Local	Direction from Accident Site:	112°
Lowest Cloud Condition:		Visibility	4 miles
Lowest Ceiling:	Overcast / 300 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.88 inches Hg	Temperature/Dew Point:	16°C / 14°C
Precipitation and Obscuration:	Moderate - None - Mist		
Departure Point:	Camarillo, CA (CMA)	Type of Flight Plan Filed:	VFR/IFR
Destination:	Phoenix, AZ (DVT)	Type of Clearance:	IFR; VFR on top
Departure Time:	07:58 Local	Type of Airspace:	Class D

CMA is located within a coastal basin about 7.5 miles from the Pacific Ocean. The area is affected by marine layer weather patterns, particularly during the early summer months.

A terminal aerodrome forecast for CMA issued at 0506 on the day of the accident indicated persistent marine layer conditions throughout the morning and early afternoon with a 3-knot wind, 6-mile visibility, mist, and a broken ceiling at 600 ft agl. A forecast issued at 0713 indicated that these conditions would worsen between 0700 and 0900 with expected variable wind at 3 knots, 1/2-mile visibility, fog, and an overcast ceiling at 200 ft agl.

Area PIREPs surrounding the time of the accident indicated cloud tops between 400 and 1,600 ft. A Graphical Forecasts for Aviation issued before the accident flight, which was valid at the accident time, indicated broken cloud coverage with bases at 300 ft and tops at 2,100 ft.

As previously stated, weather information was relayed to the pilot during his 0724 call to Leidos Flight Service. No evidence indicated what, if any, additional weather information the pilot received before or during the accident flight.

The weather observations surrounding the accident time were consistent with low IFR to IFR conditions. Low IFR is defined as ceilings below 500 ft agl and/or visibility less than 1 statute mile.

Airport Information

Airport:	CAMARILLO CMA	Runway Surface Type:	Asphalt;Concrete
Airport Elevation:	76 ft msl	Runway Surface Condition:	Dry
Runway Used:	26	IFR Approach:	None
Runway Length/Width:	6013 ft / 150 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	On-ground
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	34.223017,-119.12125

The first point of impact was identified by a wing-shaped imprint at the top wall of a building located south of the freeway, 1 mile west-northwest of the departure end of runway 26. The imprint was about 50 ft agl, and its shape corresponded to a 15° right-wing-low impact attitude. The outboard section of the right wing and aileron were located on the building's flat roof. A trail of debris consisting of wing skin fragments and the right flap continued on a heading of about 035° and across the freeway to a secondary impact point in a strawberry field that was 750 ft beyond the first impact point (as shown in figures 1 and 2).



Figure 1. Location of the wreckage and debris field in relation to the departure runway.



Figure 2. Debris field facing southeast.

Note: The debris field travels from right to left, with the initial impact point to the right on the other side of the freeway. The departure end of runway 8 is 1 mile in the background beyond the clouds.

The debris beyond the secondary impact point consisted of the propeller assembly, cabin skin fragments, and flight instruments, all of which led to the main wreckage, which was on the same heading about 250 ft downrange.

The airframe sustained extensive impact and thermal damage through to the leading edge of the tail assembly. Impact and thermally damaged remnants of the entire left wing, along with the inboard section of the right wing, remained attached to the center of the cabin.

The elevator trim jack screw located in the moving tail assembly showed an extension was extended consistent with the takeoff trim setting. Both the left and right main landing gear remained within their wheel wells, and examination of the landing gear electric actuator revealed that its jackscrew was extended, consistent with the landing gear being in the up-and-raised position. A section of the right seat rail and lower seat was located and appeared to be set in the middle of its travel range.

The flight controls from the cabin to each control surface sustained significant bend, crush, and thermal damage. Examination indicated that all failures and separations exhibited overload damage signatures.

The vacuum pump was undamaged and remained attached to its pad on the engine accessory case. The unit's plastic drive coupling was intact, and disassembly of the pump revealed that the internal rotor and vanes were undamaged and intact. Damage prevented an accurate assessment of the operational viability of the attitude indicator and horizontal situation indicator, both of which were vacuum driven. Thermal and impact damage prevented an accurate assessment of the condition and operation of the remaining flight electrical instruments and the autopilot.

No evidence indicated a catastrophic engine failure, and the top spark plugs exhibited gray coloration to their electrodes, consistent with normal engine operation, and wear signatures consistent with a short service life. The turbocharger assembly compressor blades exhibited tears and bending opposite the direction of rotation, and rubbing was observed between the blade tips and outer scroll of the turbine wheel.

All three propeller blades remained attached to their hub, which had detached from the engine crankshaft. The blades exhibited leading-edge nicks and abrasions along with chordwise scratches and tip serrations. One blade exhibited trailing edge s-bending, and multiple slash marks in the dirt in the debris field were consistent with propeller rotation at impact.

No evidence indicated any preimpact mechanical or engine malfunction that would have precluded normal operation. No evidence indicated a bird strike.

Medical and Pathological Information

The Medical Examiner of Ventura County, State of California, performed an autopsy on the pilot. According to the autopsy report, the pilot's cause of death was blunt trauma. The pilot had evidence of an enlarged heart, 60% narrowing of a coronary artery, a localized area of scarring of the heart, a mitral valve replacement, and an implanted cardiac pacemaker/defibrillator. The autopsy report stated that a representative from the pacemaker/defibrillator manufacturer attempted to download recorded data from the damaged device but was unsuccessful.

As previously stated, the pilot was operating the airplane with BasicMed provisions, which allow pilots who meet certain requirements to fly without current medical certification. Among those requirements are the following: a pilot must have completed a BasicMed Course within 24 calendar months and must have had a medical examination with a state-licensed physician using the CMEC within 48 months. Pilots with certain medical conditions, including heart valve replacement, may not exercise BasicMed privileges unless they have completed the process for obtaining an FAA Authorization for Special Issuance of a Medical Certificate for the relevant conditions. The accident pilot had not completed this process for his mitral valve replacement.

Additional Information

Radar and ADS-B flight tracks for the accident airplane were not captured by any FAA or an associated facility. At runway elevation (77 ft mean sea level), CMA sits along the edge of the Point Mugu Naval Air Station radar sensor coverage area, which is the closest radar sensor to the accident site. The accident site was about the same elevation as CMA airport. Even though the accident airplane was equipped with an ADS-B transponder, theoretical ADS-B coverage models are not available for altitudes below 500 ft mean sea level, so radar sensor coverage for the accident site could not be determined.

Administrative Information

Investigator In Charge (IIC):	Simpson, Elliott
Additional Participating Persons:	Jeffrey Fritz; Federal Aviation Administration FSDO; Van Nuys, CA
Original Publish Date:	April 18, 2024
Last Revision Date:	
Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=105237

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