



Aviation Investigation Preliminary Report

Location:	Gaithersburg, MD	Accident Number:	ERA23LA071
Date & Time:	November 27, 2022, 17:29 Local	Registration:	N201RF
Aircraft:	Mooney M20J	Injuries:	2 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

On November 27, 2022, at 1729 eastern standard time, a Mooney M20J, N201RF, was substantially damaged when it was involved in an accident near Gaithersburg, Maryland. The private pilot and passenger were seriously injured. The airplane was operated as a Title 14 *Code of Federal Regulations (CFR)* Part 91 personal flight.

Preliminary Automatic Dependent Surveillance - Broadcast (ADS-B) data revealed that the airplane departed Montgomery County Airpark (GAI), Gaithersburg, Maryland, on the morning of the accident and flew to Westchester County Airport (HPN), White Plains, New York. The accident occurred on the return flight to GAI while the airplane was operating on an instrument flight rules (IFR) flight plan.

Dark night instrument meteorological conditions prevailed in the area of GAI at the time of the accident. The reported weather at GAI included variable wind at 4 knots, an overcast ceiling at 200 ft above ground level (agl), and 1.25 statute miles visibility in fog. A convective SIGMET was valid for the accident time.

Preliminary Federal Aviation Administration (FAA) air traffic control communication information revealed that the pilot was advised to expect the RNAV/GPS A instrument approach procedure at GAI, but the pilot expressed a preference for the RNAV (GPS) RWY 14 approach procedure. The controller cleared the pilot to fly directly to the BEGKA intermediate fix (IF), approximately southwest and ahead of the airplane's position, but instead, the airplane turned about 100° to its right. The controller provided numerous heading changes and direct clearances to waypoints on the RNAV (GPS) RWY 14 approach procedure; however, the pilot made a series of left and right turns, near course reversals, or continued established headings as the controller repeatedly requested that the pilot turn to a different heading. At one point, the controller requested that the pilot confirm he had the BEGKA waypoint and spelled it for him. The pilot responded that he had entered the information incorrectly and was making the

correction. About that time, another airplane on approach to GAI announced that visibility was below minima and requested a diversion to another airport.

The controller instructed the accident pilot to proceed direct to BEGKA and cleared him for the RNAV (GPS) RWY 14 approach. The minimum altitude at BEGKA, 11.3 nautical miles (nm) from the runway, was 3,000 ft mean sea level (msl). The airplane crossed BEGKA about 2,775 ft as it aligned with the final approach course and continued its descent. The minimum altitude at the final approach fix (TIMBE), 5.2 nm from the runway, was 2,200 ft msl. The airplane crossed TIMBE at 1,725 ft msl. The minimum altitude at JOXOX waypoint, about 2.3 nm from the runway, was 1,280 ft msl; the airplane crossed JOXOX at 750 ft. The decision altitude (DA) for the final segment of the approach was 789 ft msl (The DA defines the altitude at which the pilot must initiate a missed approach procedure if specified visual references to the runway are not acquired).

About 1.25 miles from the runway and left of the runway centerline, the airplane impacted and became suspended in a power line tower at an elevation about 600 ft msl and 100 ft agl. Between JOXOX and the collision with the tower, the airplane descended as low as 475 ft. The published field elevation at GAI was 539 ft msl.

Figure 1 shows preliminary flight track information in relation to the runway 14 final approach course, with minimum altitudes for each segment of the approach shown in orange, and the airplane's altitude at those locations shown in white.



Figure 1 - Preliminary ADS-B flight track information

The pilot and passenger were seriously injured, and the airplane was substantially damaged. During a conversation with 911 call center personnel while the airplane remained suspended in the tower, the pilot reported, "I got down a little lower than I should have... I thought I was closer to the airport than I was... We could see the ground, but we couldn't see in front." After several hours, the airplane was secured to the tower, and the occupants safely egressed with the assistance of rescue and utility personnel.

The pilot held a private pilot certificate with ratings for airplane single-engine land and instrument airplane. His FAA third-class medical certificate was issued August 1, 2022, and he declared 1,432 total hours of flight experience on that date.

According to FAA and maintenance records, the airplane was manufactured in 1977 and was powered by a Lycoming IO-360-A3B6D 200-horsepower engine. The airplane's most recent annual inspection was completed February 1, 2022, at 4,288.5 total aircraft hours. The altimeter static system and altitude reporting equipment were tested in accordance with CFR 91.411 on June 22, 2022.

Local emergency services and utility personnel, along with an aircraft recovery specialist, separated the airframe from the engine and cut two of the three propeller blades to disentangle the engine from the tower structure; one blade was separated during impact.

Examination of the airplane was conducted and supervised by an FAA aviation safety inspector, who confirmed continuity from the cockpit flight controls to all flight control surfaces. The propeller blades displayed similar twisting, bending, leading edge and tip gouging, and chordwise scratching.

Visual examination of the engine revealed only minor impact damage to intake and exhaust stacks, ignition P-leads, and a fuel pump drain port fitting. The engine rocker box covers were removed to facilitate the examination. The propeller was rotated by hand and continuity was established through the powertrain to the valvetrain and the accessory section. Compression was confirmed on all cylinders using the thumb method. The dual magneto was removed and produced spark at all terminal leads when rotated.

Fuel lines and fuel system components throughout engine contained fuel. The oil suction screen and oil filter screens were clean, unobstructed, and absent of debris. The vacuum pump was removed and pumped air when rotated by hand. The engine exam revealed no pre-impact mechanical anomalies that would have prevented normal operation.

In interviews with local media after the accident, the pilot described the fog at the time of the accident as “pea soup,” and expressed concern about his altimeter working correctly.

A calibrated altimeter test instrument was installed by an airframe and powerplant mechanic with inspection authority under the supervision of an NTSB investigator. Functionality testing was performed at the as-found setting of 29.40 in the altimeter’s Kollsman window, then 29.92, and finally a Barometric Scale Error Test was performed through a range of 28.10 and 30.99. According to the test report, the altimeter was “well within the test allowable error at all ranges.”

Aircraft and Owner/Operator Information

Aircraft Make:	Mooney	Registration:	N201RF
Model/Series:	M20J	Aircraft Category:	Airplane
Amateur Built:			
Operator:		Operating Certificate(s) Held:	None
Operator Designator Code:			

Meteorological Information and Flight Plan

Conditions at Accident Site:	IMC	Condition of Light:	Night
Observation Facility, Elevation:	KGAI,539 ft msl	Observation Time:	16:56 Local
Distance from Accident Site:	1.25 Nautical Miles	Temperature/Dew Point:	11°C /11°C
Lowest Cloud Condition:		Wind Speed/Gusts, Direction:	/ ,
Lowest Ceiling:	Overcast / 200 ft AGL	Visibility:	0.25 miles
Altimeter Setting:	29.45 inches Hg	Type of Flight Plan Filed:	
Departure Point:		Destination:	

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Substantial
Passenger Injuries:	1 Serious	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Serious	Latitude, Longitude:	39.18441,-77.188553 (est)

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian
Additional Participating Persons:	Michael Bevan; FAA/FSDO; Baltimore, MD Ryan Enders; Lycoming Engines; Williamsport, PA
Note:	The NTSB did not travel to the scene of this accident.