

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA22FA050

WRECKAGE EXAMINATION SUMMARY

November 11, 2021

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A. ACCIDENT

Location: Villa Rica, Georgia
Date: November 8, 2021
Time: 1814 Eastern Standard Time (EST)
Airplane: Mooney M20F

B. WRECKAGE EXAMINATION SUMMARY

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C. SUMMARY

On November 8, 2021, about 1255 eastern standard time, a Mooney M20F, N3482F, was substantially damaged when it was involved in an accident near Villa Rica, Georgia. The airline transport pilot was fatally injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

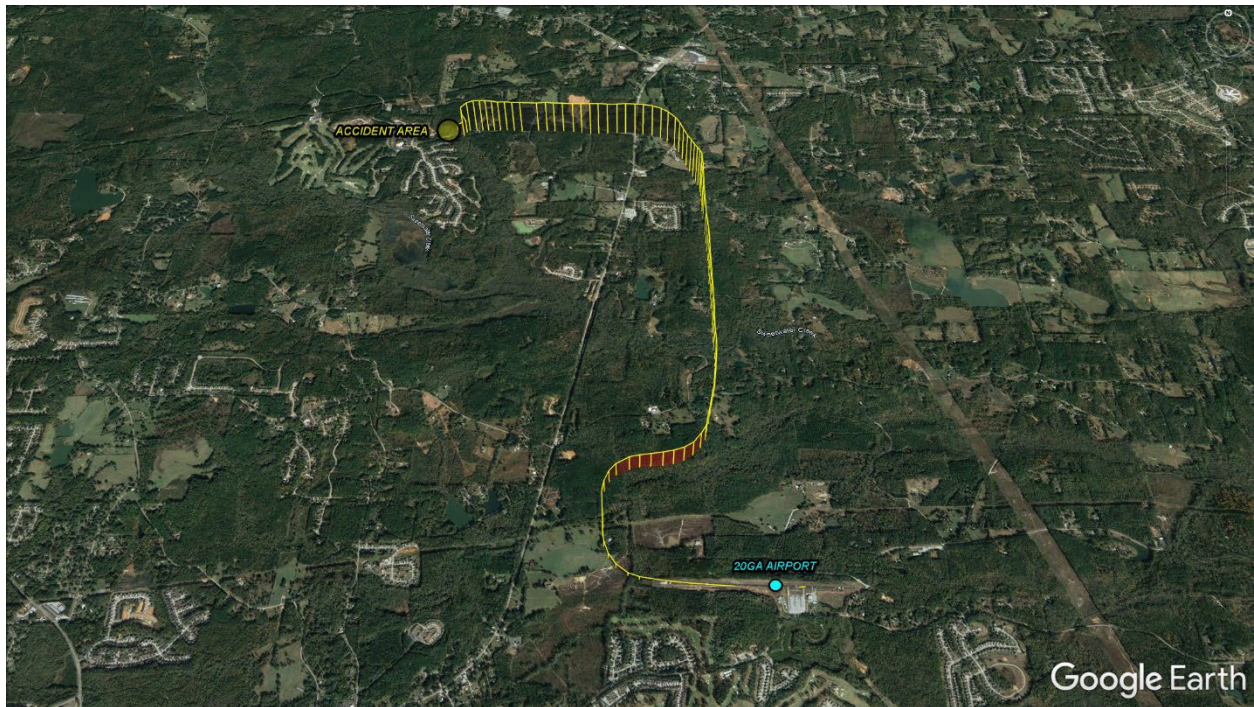


Figure 1 - Preliminary ASD-B Track

D. DETAILS OF THE EXAMINATION

1.0 Accident Site

The airplane came to rest in a heavily wooded area, at an elevation of 1020 ft, upright, and in a level attitude on a 240° heading. All major components of the airplane were located in the vicinity of the main wreckage. There were multiple trees near the main wreckage that did not exhibit any impact damage. There was no odor of fuel at the accident site.



Figure 1 - Main Accident Site

2.0 Airframe Examination

2.1 Fuselage

The fuselage remained intact and was impact crushed. Flight control continuity was established from all flight control surfaces to the flight controls in the cockpit.



Figure 2. Front view of fuselage.

2.2 Empennage

The empennage remained attached to the fuselage and was twisted to the left. The left horizontal stabilizer and elevator remained attached to the empennage and no damage was noted. The right horizontal stabilizer and elevator remained attached to the empennage and were wrinkled. The rudder and vertical stabilizer remained attached to the empennage. The vertical stabilizer was wrinkled.



Figure 3. View of right side of empennage.

2.3 Wings

The right wing remained attached to the fuselage at all attach points. The flap remained attached to the wing and was in the extended position. The right aileron was impact separated and located about 25 ft forward of the main wreckage. The right wing tip was also impact separated and located forward of the wreckage. The aileron balance weight was impact separated and located in the vicinity of the wing. The right wing fuel tank was breached. The right fuel tank vent was free of debris. The right fuel cap remained seated and locked into place. The fuel tank was examined and no fuel was noted in the tanks.



Figure 4. View of right wing.

The left wing remained attached to the fuselage. The flap remained attached to the wing and was in the extended position. The left aileron remained attached to the left wing. The left aileron balance weight was impact separated and located next to the wing. The left fuel tank was breached and no fuel was noted in the tank. The left fuel cap remained seated and locked into place. The left wing fuel vent was clogged with debris similar to the dirt at the accident location. The stall warning horn was not located, but there was a place on the left wing where it should have been installed.



Figure 5. View of left wing.

2.4 Landing Gear

The airplane was equipped with tricycle, retractable landing gear. All three landing gear were in the partially extended position.

The landing gear indicator lights were removed and examined. The light bulb associated with the green light (landing gear locked) filament was stretched. The light bulb associated with the red light (landing gear unlocked) filament was not stretched.

2.5 Cockpit

The left seat control yoke was impact separated. The right seat control yoke remained attached to the mount. All switches were turned in the OFF position and the instrument panel was crushed in a downward direction.



Figure 6. View of instrument panel.

2.6 Survivability

The seats were equipped with lap belts only. The seats remained attached to the fuselage.

2.7 Fuel/Fuel System

The fuel selector was in the left tank position. When pressurized air was applied to the fuel line going from the firewall back to the tanks, fuel and air came out of the line going into the left fuel tank. There was no debris noted on the fuel screens inside the fuel tanks. The gascolator was disassembled and the fuel screen did not contain debris.



Figure 7. View of fuel selector as found.

2.8 Other Systems

The airplane was equipped with a Garmin 396 GPS and an Engine Data monitor - JPI 700 that were removed and retained for data download.

The ELT was located unsecured in the back seat of the airplane.

3.0 Engine Examination

Lycoming IO-360-A1A

Rated power – 200 HP

Most recent inspection – Annual inspection - October 1, 2020



Figure 8. Front view of engine.

The engine remained attached to the airframe and was removed to facilitate further examination. Crankshaft and valvetrain continuity were confirmed when the crankshaft was rotated through 360° of motion. Thumb compression and suction was observed on all cylinders.

3.1 Induction and Exhaust System

The exhaust pipes were impact damaged.

3.2 Magnetos

The left and right magnetos remained attached to the engine. The bolts holding the right magneto to the engine were not tight. The magnetos were turned by hand and sparked on all towers.



Figure 9. View of magnetos

3.3 Ignition system

All spark plugs were removed from the cylinders and examined. All spark plugs exhibited worn out/severe condition and were light grey in color.



Figure 10. Spark plugs and fuel injector nozzles.

3.4 Fuel System

The fuel line from the airframe to the engine driven fuel pump contained fuel. The fuel line at the fuel manifold going to the No. 2 fuel injector had fuel in it. Nos. 1, 3, and 4 fuel lines going from the manifold to the fuel injectors did not contain fuel. Fuel was noted in the fuel manifold and the diaphragm was undamaged.

The mixture cable armature was broken from the servo but the cable remained attached. The fuel servo was impact separated from the engine sump but remained attached through fuel lines. The fuel line from the servo to the manifold did not contain fuel. Fuel was noted in the fuel line inlet to the fuel servo. The fuel servo was disassembled and contained fuel. The throttle cable remained attached to the fuel servo. The fuel inlet screen was removed from the servo and was free of debris. All fuel drained from the engine had a brown appearance, but had an odor similar to 100LL aviation fuel. Furthermore, the fuel was tested with water finding paste and no water was noted.

The engine driven fuel pump was removed and could not be operated because the armature was impact damaged. Fuel was noted inside the pump and the diaphragm was intact.

The fuel injector nozzles were removed from the cylinders and were not obstructed.

3.5 Lubrication System

The oil filler neck was impact separated. There was oil present in the engine. The oil suction screen was removed from the sump and no debris was noted. The oil filter was removed from the engine and had March 21, 2021 written on it with a tach time of 3783 hours.



Figure 11. View of oil filter housing and filter.

3.6 Vacuum Pump/System

The vacuum pump was removed from the engine and pumped air when turned by hand.



Figure 12. Vacuum Pump

4.0 Propeller Examination

The propeller remained attached to the engine and was removed to facilitate examination. Both propeller blades remained attached to the hub. Blade A exhibited bending at the tip. Blade B was curled, the tip was torn off, and the blade exhibited chordwise scratching. In addition, a root in the ground was cut at a 45° angle near Blade B.



Figure 13. Propeller.

The propeller governor was removed from the engine and pumped oil when the drive was turned by hand. In addition, there was no debris in the governor screen.



Figure 14. View of propeller governor screen.

Submitted by:

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