

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA24FA154

WRECKAGE EXAMINATION REPORT

January 28, 2026

A. ACCIDENT

Location: St. Augustine, Florida
Date: March 25, 2024
Time: 1154 EDT
1554 UTC
Airplane: Mooney M20K

B. WRECKAGE EXAMINATION REPORT

IIC	Kurt Gibson NTSB Washington, D.C.
Investigator	Todd Gunther NTSB Washington, D.C.
Party Coordinator	Michael J. Loehlien FAA Orlando, Florida

C. SUMMARY

On March 25, 2024, at about 1154 eastern daylight time, a Mooney M20K, N4387W, was substantially damaged when it was involved in an accident in St. Augustine, FL. The commercial pilot and passenger were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* (CFR) Part 91 personal flight.

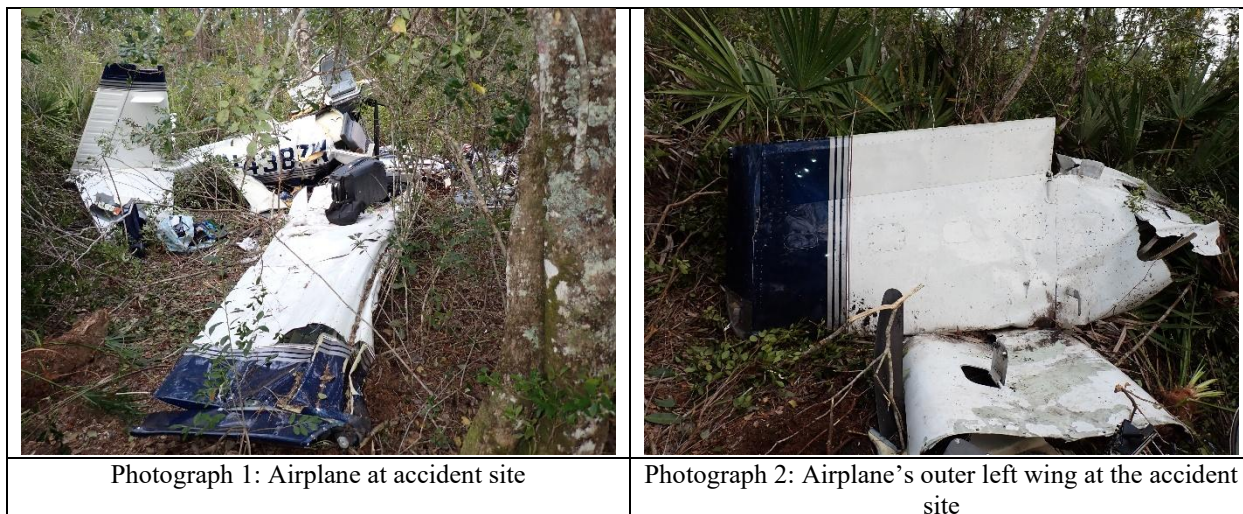
The pilot was in contact with the control tower at the Northeast Florida Regional Airport (SGJ), St. Augustine, FL. Shortly after takeoff, the pilot reported a door had popped open and that he needed to return to land. While on final approach, air traffic control lost contact with the airplane. A search was conducted, and the wreckage was found by an overflying aircraft.

D. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

The airframe sustained substantial damage to the fuselage and to both wings. The outboard 4 ft of the left wing had separated from the rest of the wing and was

located at the accident site. The right wing displayed aft crushing damage. The empennage had partially separated from the rest of the fuselage.



Flight control continuity was established between the rudder, elevator, and both ailerons from their respective flight controls to the cockpit. Multiple push/pull rods were fractured, and all the breaks were consistent with impact damage or recovery cuts. The flap, landing gear, and pitch trim position could not be determined at the time of the examination.

Both occupants' shoulder harnesses were cut by first responders in order to extricate them. The throttle, propeller, and mixture controls were all found in the full forward position, and the magneto switch was found in the "BOTH" position. The ELT remained attached to the airframe and to its antenna. The ELT switch was found in the "OFF" position. A JPI engine monitor and a Garmin GPS were located in the wreckage and were retained for data download.



The airplane was equipped with four fuel tanks, two fuel tanks in each wing. All four fuel tanks were breached and were devoid of fuel. All four fuel caps remained secured to their respective filler ports. The fuel caps were removed and examined; they displayed normal operating signatures. The fuel strainer bowl was disassembled and visually examined. The fuel strainer screen contained debris; however, it was not obstructed. The fuel selector valve was not observed.



Photograph 4: Fuel strainer screen



Photograph 5: Fuel strainer screen

Access to the cabin was provided by the main cabin door located on the right side of the fuselage. The door had inside and outside operating handles. The door had two latching mechanisms, one located on top of the door, and one at the aft, center of the door. The main cabin door remained attached to the fuselage by the forward hinge; the cabin door hold open arm had separated from the door. The upper door cam latch and cabin door pin were found in the retracted position. The door trim was removed, and the door latch assembly was examined. The aft door pin actuating rod was bent, and the door latch handle assembly was fractured which was consistent with impact damage to the door. The upper door latch assembly was undamaged and operated normally. The aft door latch pin was capable of normal movement when operated manually. The aft door latch pin was found with the beveled side toward the outside of the door. The upper door latch pin remained attached to the fuselage and was undamaged, there were no signs of tearing or gouging of the latch pin. The aft door latch striker plate remained attached to the fuselage and was undamaged. There were no signs of the aft door pin being forced past the door pin striker plate hole.



Photograph 6: Main cabin door at accident site



Photograph 7: Main cabin door outer latch handle



Photograph 8: Main cabin door aft latch pin



Photograph 9: Main cabin door aft striker plate



Photograph 10: Main cabin door upper door latch



Photograph 11: Main cabin door upper door latch pin



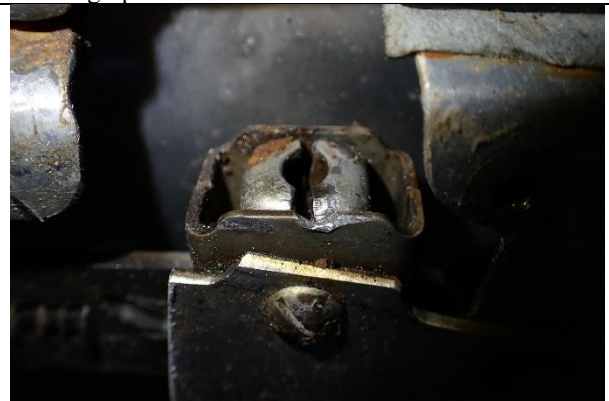
Photograph 12: Main cabin door after trim removal



Photograph 13: Main cabin door interior door handle



Photograph 14: Main cabin door upper door latch



Photograph 15: Main cabin door upper door latch



Photograph 16: Main cabin door aft door latch pin, and actuating rod



Photograph 17: Main cabin door aft door latch pin

The baggage door was found in the open position and remained attached to the fuselage by its door hinge and hold open arm. The door latch was found in the latched position and the door lock was in the locked position. Both baggage door latch pins were in the extended position. Both baggage door latch striker plates remained attached to the fuselage and both striker plates displayed gouging in the direction of the baggage door opening position. The baggage door was placed in the closed position, and it was observed that a crease in the fuselage skin continued into baggage door when the door was in the closed position.



Photograph 18: Baggage door as found at accident site



Photograph 19: Baggage door in the closed position



Photograph 20: Baggage door aft latch pin



Photograph 21: Baggage door forward latch pin



Photograph 22: Baggage door aft striker plate



Photograph 23: Baggage door forward striker plate

2.0 Engine Examination

The engine remained partially attached to the airframe through one engine mount, cables, wires, and hoses. The engine and all the engine components displayed impact damage. The propeller flange had separated from the rest of the crankshaft, and multiple 45-degree cracks were noted along the remaining portion of the crankshaft; the fracture surface was about a 45-degree angle. Most of the

crankshaft and camshaft were visible through the broken oil sump. The visible portions of the crankshaft, camshaft, connecting rods, and lifters displayed normal operating and lubrication signatures. The cylinders were inspected using a lighted borescope. The pistons, exhaust valves, intake valves, and cylinder walls displayed normal operating and combustion signatures. All the rocker arms, valve springs, and valve stems displayed normal operating and lubrication signatures. The oil filter was cut open and there was no metallic debris noted inside the filter pleats.



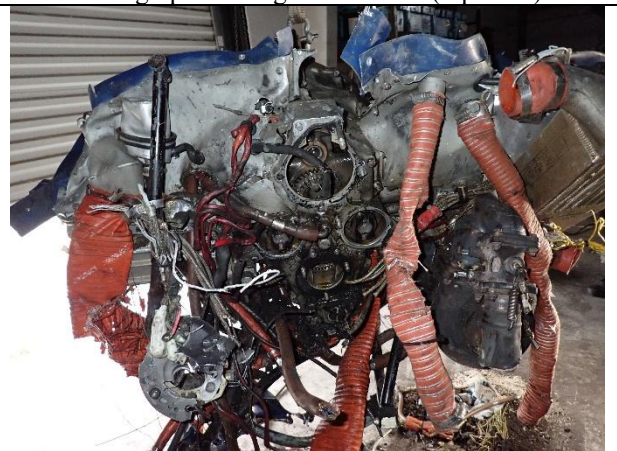
Photograph 24: Engine overview (left side view)



Photograph 25: Engine overview (top view)



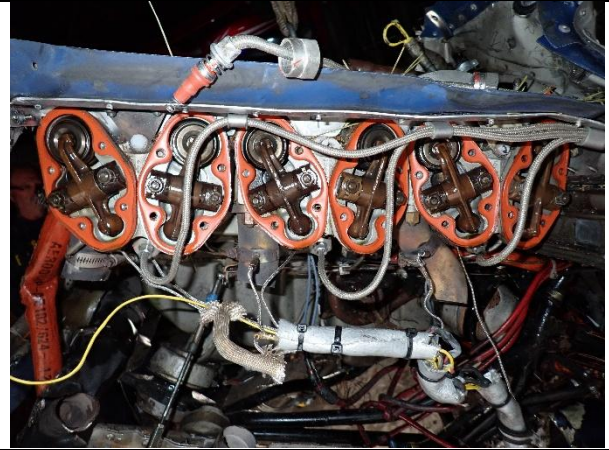
Photograph 26: View from broken oil sump (camshaft visible)



Photograph 27: Engine accessory housing



Photograph 28: Engine overhead components (right side)



Photograph 29: Engine overhead components (left side)



Photograph 30: Oil filter pleats



Photograph 31: Crankshaft



Photograph 32: Cracks in crankshaft



Photograph 33: Crankshaft fracture surface

The fuel pump was removed, and the drive shaft coupling was noted to be intact. The fuel pump was disassembled, and the internal components displayed normal operating signatures. The throttle and fuel metering assembly was disassembled and the internal components displayed normal operating signatures. The fuel manifold valve was disassembled and examined. A small amount of fuel, consistent with 100LL, was found in the fuel manifold valve. The fuel was tested using water finding paste, there was no water detected in the fuel sample. The manifold valve screen contained fibrous debris in the screen; however, the screen was not

blocked. The rest of the components displayed normal operating signatures. All the fuel nozzles were removed and were noted to be clear of obstructions.



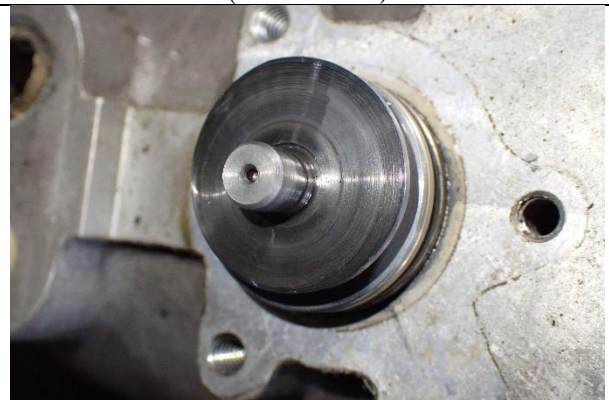
Photograph 34: Engine driven fuel pump



Photograph 35: Engine driven fuel pump (disassembled)



Photograph 36: Throttle and fuel metering assembly



Photograph 37: Fuel metering assembly (disassembled)



Photograph 38: Fuel metering assembly (disassembled)



Photograph 39: Fuel metering assembly (disassembled)



Photograph 40: Fuel manifold valve



Photograph 41: Fuel manifold screen

Both magnetos were removed from the engine and the drive shafts were noted to be capable of rotation. Both magnetos were capable of producing a spark on all of their posts in the correct firing order. The top spark plugs were removed for examination, and the bottom spark plugs were examined using a lighted borescope. All spark plug electrodes displayed normal wear and operating signatures when compared with the Champion Aviation Service Manual AV6-R.



Photograph 42: Top spark plugs

The turbocharger remained attached to the exhaust and intake system. There was a significant amount of impacted dirt in the turbocharger compressor section. The dirt was removed, and it was observed that most of the compressor blades were broken, and the compressor nut was found loose. The turbine displayed normal operating signatures and was capable of normal rotation. The wastegate displayed impact damage signatures, and the wastegate actuator had broken free and was not observed. The wastegate valve was found in the closed position and the wastegate actuating arm displayed impact damage. The turbocharger controller displayed impact damage signatures, and the oil lines were secured to the controller.



Photograph 43: Turbocharger turbine section



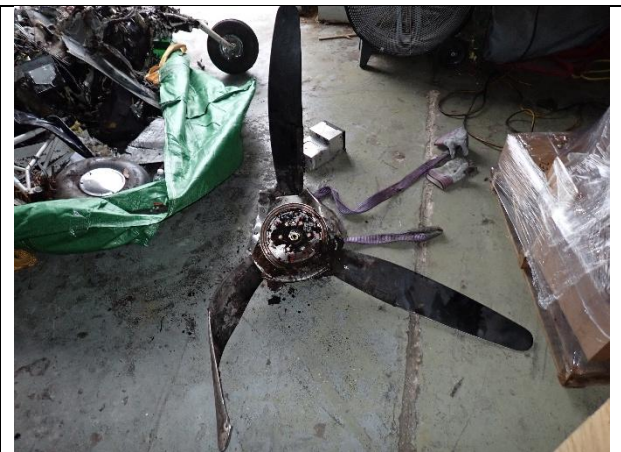
Photograph 44: Turbocharger compressor

3.0 Propeller Examination

The three-blade, constant-speed propeller remained attached to the crankshaft propeller flange; however, the propeller flange had separated from the rest of the crankshaft. All three of the propeller blades remained secured in the hub, and the blades displayed impact damage. One propeller blade displayed aft bending and twisting deformation, and the cambered side displayed polishing and chordwise scratches. Another propeller blade displayed minor aft bending deformation and polishing of the leading edge and cambered side of the propeller blade. The third propeller blade displayed aft bending deformation and some chordwise scratches.



Photograph 45: Propeller overview (cambered side view)



Photograph 46: Propeller overview (back side view)

The propeller governor remained attached to the engine and displayed impact damage signatures. The governor was removed, and the oil screen gasket was noted to be clear of debris.



Photograph 47: Propeller governor



Photograph 48: Propeller governor gasket and screen

4.0 Aircraft Information

The airplane's last annual inspection was on 09/08/2023 at a hobbs time of 736.4. The last maintenance entry was on 03/19/2024 at a hobbs time of 736.7. The maintenance entry was for a repair of the right main gear brakes. At the time of the last maintenance entry, the airframe had a total time of 3781.8 hours.

The engine's last major overhaul was on 04/30/1996. The last maintenance entry for the engine was on 03/19/2024, at that time the engine had accumulated 1,637.3 hours since the last major overhaul. The last maintenance entry indicated that Continental CSB19-01A was complied with, and the oil filter was removed, inspected, and a new filter was installed.