



# Aviation Investigation Final Report

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<b>Location:</b>	Tullahoma, Tennessee	<b>Accident Number:</b>	ERA24LA082
<b>Date &amp; Time:</b>	January 3, 2024, 12:26 Local	<b>Registration:</b>	N231GG
<b>Aircraft:</b>	Mooney M20K	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Unknown or undetermined	<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

Shortly after takeoff, during a cruise climb about 2,000 ft above ground level, the engine suddenly lost all power without any warning. The pilot attempted to glide the airplane back to the departure airport and restart the engine; however, the engine did not restart and the airplane impacted hilly terrain about 1/2-mile before reaching the runway.

The engine's most recent overhaul was about 30 years before the accident, and it accrued about 692 hours during that time. Additionally, the airplane had not been flown for more than 2 years before the accident flight. The pilot did not purchase fuel and the age of the fuel in the airplane could not be determined. During wreckage recovery, about 16 gallons of fuel (8 gallons per side) were drained from the airplane's fuel tanks. The fuel was blue, clear, and consistent with 100LL aviation gasoline. No visible contamination was observed. Subsequent examination of the engine did not reveal any anomalies, with the exception of an inoperative right magneto; however, that did not explain a total loss of engine power without any engine roughness.

## Probable Cause and Findings

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

A total loss of engine power for undetermined reasons.

## Findings

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**Not determined**

(general) - Unknown/Not determined

## Factual Information

### History of Flight

<b>Enroute</b>	Unknown or undetermined (Defining event)
<b>Emergency descent</b>	Off-field or emergency landing
<b>Landing</b>	Collision with terr/obj (non-CFIT)

On January 3, 2024, about 1226 central standard time, a Mooney M20K, N231GG, was substantially damaged when it was involved in an accident near Tullahoma, Tennessee. The commercial pilot was not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that he had recently purchased the airplane and the accident flight was his first flight in the airplane. The accident flight was also the first flight since the airplane's most recent annual inspection, which was completed the same day. No anomalies were noted during the preflight inspection, engine start, taxi, and engine run-up. The airplane took off uneventfully from runway 36 at Tullahoma Regional Airport (THA), Tullahoma, Tennessee.

The pilot made a right turn southeast for the 20-mile flight back to his home airport, Franklin Country Airport (UOS), Sewanee, Tennessee. The pilot had planned to climb to 4,500 ft mean sea level (msl) for the short flight home. About 3,200 ft msl (2,000 above ground level), the engine suddenly lost all power without any warning. At that time, the airplane was about 4 miles from THA and the pilot turned back to the airport in an attempt to glide to runway 24. He also tried to restart the engine; however, the starter motor would not rotate the propeller. The pilot was unable to glide the airplane to the runway, and it impact hilly terrain about 1/2-mile before reaching the runway.

Examination of the wreckage by a Federal Aviation Administration inspector revealed that it came to rest upright. Both wings and the empennage sustained substantial damage.

Review of maintenance records revealed that the engine had accumulated about 692 hours since its most recent overhaul in 1994. The engine manufacturer recommended overhaul at 1,500 hours of operation or 12 calendar years, whichever occurs first. Additionally, the airplane had not been flown during the 26-month period before the accident flight. The pilot did not purchase fuel before the accident flight and stated that the fuel onboard could have been 2 years old or older.

During recovery, about 16 gallons of fuel (8 gallons per tank) were drained from the airplane's fuel tanks. The fuel was blue, clear, and consistent with 100LL aviation gasoline. No visible contamination was observed.

The engine was examined following recovery of the airplane. The top spark plugs were removed. Their electrodes were intact and light gray in color. The propeller was rotated by hand. Crankshaft, camshaft, and valvetrain continuity were confirmed to the rear accessory section of the engine and thumb compression was attained on all cylinders. The left magneto produced spark at all leads when rotated by hand. The right magneto would not produce spark when rotated by hand. It was disassembled and no anomalies were noted with the points or rotor. The fuel sump and screen were absent of debris.

### Pilot Information

<b>Certificate:</b>	Commercial; Flight instructor	<b>Age:</b>	23, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	3-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Airplane multi-engine; Airplane single-engine; Instrument airplane	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 2 Waiver time limited special	<b>Last FAA Medical Exam:</b>	November 13, 2020
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	May 25, 2023
<b>Flight Time:</b>	416 hours (Total, all aircraft), 0 hours (Total, this make and model), 392 hours (Pilot In Command, all aircraft), 82 hours (Last 90 days, all aircraft), 23 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Mooney	<b>Registration:</b>	N231GG
<b>Model/Series:</b>	M20K	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1979	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	25-0171
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	January 3, 2024 Annual	<b>Certified Max Gross Wt.:</b>	2900 lbs
<b>Time Since Last Inspection:</b>	0 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	2406 Hrs at time of accident	<b>Engine Manufacturer:</b>	Continental
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	TSIO-360-GB-1
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	210 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	THA,1084 ft msl	<b>Distance from Accident Site:</b>	1 Nautical Miles
<b>Observation Time:</b>	12:26 Local	<b>Direction from Accident Site:</b>	240°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	/	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>	30 inches Hg	<b>Temperature/Dew Point:</b>	4°C / -1°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Tullahoma, TN	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Sewanee, TN (UOS)	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>		<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>	Tulahoma Regional Airport THA	<b>Runway Surface Type:</b>	Concrete
<b>Airport Elevation:</b>	1084 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	24	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	5501 ft / 100 ft	<b>VFR Approach/Landing:</b>	Forced landing;Straight-in

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	35.380125,-86.246778

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Gretz, Robert
<b>Additional Participating Persons:</b>	Robert Mullins; FAA/FSDO; Nashville, TN
<b>Original Publish Date:</b>	January 2, 2025
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 3</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=193598">https://data.ntsb.gov/Docket?ProjectID=193598</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).