Aviation Investigation Final Report

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

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

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Enroute	Unknown or undetermined (Defining event)
Emergency descent	Off-field or emergency landing
Landing	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

Certificate:	Commercial; Flight instructor	**Age:**	23,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	
Medical Certification:	Class 2 Waiver time limited special	**Last FAA Medical Exam:**	November 13, 2020
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	May 25, 2023
Flight Time:	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

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

Meteorological Information and Flight Plan

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

Airport Information

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

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	35.380125,-86.246778

Administrative Information

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