



Aviation Investigation Final Report

Location:	Roanoke, Texas	Accident Number:	CEN18LA377
Date & Time:	September 7, 2018, 21:03 Local	Registration:	N33354
Aircraft:	Piper PA32	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (total)	Injuries:	1 Serious, 3 Minor, 2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The commercial pilot and five passengers departed on a personal night cross-country flight. According to the pilot, the engine start and run-up were uneventful. Shortly after takeoff, the engine lost total power, and the pilot was unable to maintain altitude. He conducted a forced landing, which resulted in substantial damage to the fuselage and wings.

An engine examination revealed that the upper right spark plugs were in a worn-out normal condition and the lower spark plugs were in a worn-out severe condition. The lower spark plugs were replaced, and a test engine run was conducted; the engine started and ran without hesitation at various power settings. However, it was noted during the test that the engine would not run on the right magneto. Further examination of the right magneto found a failed magneto coil. Despite the failed coil on the right magneto and the spark plug condition, the engine ran at full power settings. No other anomalies were noted with the engine or fuel system that would have precluded normal operation. A failed magneto or the noted spark plug conditions would have resulted in a rough-running engine but not a complete loss of engine power as the pilot described. Thus, the reason for the total loss of power could not be determined.

Probable Cause and Findings

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

The total loss of engine power for reasons that could not be determined based on the available evidence.

Findings

Not determined	(general) - Unknown/Not determined
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Factual Information

History of Flight

Initial climb	Loss of engine power (total) (Defining event)
Emergency descent	Off-field or emergency landing
Emergency descent	Collision with terr/obj (non-CFIT)

On September 7, 2018, about 2103 central daylight time, a Piper PA-32 airplane, N33354, was substantially damaged during a forced landing near Roanoke, Texas. The pilot and two passenger sustained minor injuries, two passengers were not injured, and one passenger sustained serious injuries. The personal flight was conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91. Night visual meteorological conditions prevailed and no Federal Aviation Administration (FAA) flight plan had been filed for the flight. The flight was originating at the time of the accident and was en route to Gulfport-Biloxi International Airport (GPT), Gulfport, Mississippi.

According to the pilot, the airplane's engine started without hesitation or issue and the engine run-up, prior to takeoff was normal with no discrepancy in the magneto drop or instrument indications. Shortly after takeoff from runway 35 "the engine failed" and the pilot was not able to maintain altitude. He stated that the stall horn sounded, and he elected to land straight ahead. The airplane impacted the ground and came to rest at the base of several trees and bushes; both wings separated from the airplane and the fuselage came to rest on its left side.

The pilot stated that after the accident he turned the fuel selector valve, the fuel pump, and the ignition switch to the "off" position.

An examination of the engine revealed that the lower set of spark plugs and the upper right set of spark plugs exhibited worn out – severe signatures and normal to worn out signatures respectively when compared to the Champion Check-a-Plug chart. An engine test run was conducted. With the wings separated, the fuselage was strapped down to a trailer. The damaged propeller was removed, and a replacement propeller was installed. Additionally, a fuel can was connected to the electric driven fuel pump and a fuel line was then run to the engine driven fuel pump. Several attempts were made at starting the engine; however, after the lower spark plugs were replaced, the engine started without hesitation and ran at various power settings. The engine would not run when the right magneto was selected. An examination of the right magneto revealed that the coil had failed.

The airplane was equipped with a JPI 900. Engine parameters downloaded from the unit illustrated expected exhaust gas temperatures and cylinder head temperatures consistent with the engine start, an engine run-up, and the increase in power for takeoff. The data also illustrated the increase in oil temperature, manifold pressure, rpm, and fuel flow, also consistent with the engine start, an engine run-up, and the increase in power for takeoff. The engine rpm and fuel flow drop off about 20 seconds before the end of the recording.

Pilot Information

Certificate:	Commercial	Age:	42, Male
Airplane Rating(s):	Single-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):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Without waivers/limitations	Last FAA Medical Exam:	March 1, 2018
Occupational Pilot:	No	Last Flight Review or Equivalent:	August 31, 2018
Flight Time:	441 hours (Total, all aircraft), 115 hours (Total, this make and model), 34 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N33354
Model/Series:	PA32 300	Aircraft Category:	Airplane
Year of Manufacture:	1975	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	32-7540095
Landing Gear Type:	Tricycle	Seats:	6
Date/Type of Last Inspection:	March 11, 2018 Annual	Certified Max Gross Wt.:	3400 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	6985.45 Hrs as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Installed	Engine Model/Series:	IO-540-K-1AS
Registered Owner:		Rated Power:	310 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night
Observation Facility, Elevation:	AFW,723 ft msl	Distance from Accident Site:	
Observation Time:	01:53 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Few / 6500 ft AGL	Visibility	10 miles
Lowest Ceiling:	Overcast / 14000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	360°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	29.95 inches Hg	Temperature/Dew Point:	24°C / 23°C
Precipitation and Obscuration:	Light - None - Rain		
Departure Point:	Roanoke, TX (52F)	Type of Flight Plan Filed:	None
Destination:	Glufport, MS (GPT)	Type of Clearance:	None
Departure Time:	21:00 Local	Type of Airspace:	Class E

Airport Information

Airport:	Aero Valley Airport 52F	Runway Surface Type:	Asphalt
Airport Elevation:	643 ft msl	Runway Surface Condition:	Vegetation
Runway Used:	35	IFR Approach:	None
Runway Length/Width:	3500 ft / 40 ft	VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	1 Serious, 2 Minor, 2 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Serious, 3 Minor, 2 None	Latitude, Longitude:	33.051109,-97.231941(est)

Administrative Information

Investigator In Charge (IIC):	Rodi, Jennifer
Additional Participating Persons:	Darren P Pittacora; Federal Aviation Administration; TX
Original Publish Date:	November 19, 2019
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=98271

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).