



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	Indianapolis, Indiana	Accident Number:	WPR19LA011
Date & Time:	October 21, 2018, 14:44 Local	Registration:	N2920Q
Aircraft:	Piper PA32R	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (total)	Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that he was approaching his destination airport at 1,000 ft above ground level when the engine lost total power. After an unsuccessful attempt to restart the engine, the pilot performed a forced landing to a nearby parking lot, during which the airplane sustained substantial damage. A postaccident examination of the engine revealed that the single-drive dual magneto failed to produce spark due to the displacement of its camshaft. As a result, when the camshaft was positioned to neutral, the contact points were opened instead of closed, and when the camshaft was rotated approximately 8°, the points were closed when they should have been open. The magneto was then re-assembled to manufacturer specifications, tested, and found to produce spark on all ignition leads. The displacement of the camshaft resulted in the magneto not producing spark on any of its ignition leads, and a subsequent loss of engine power. It could not be determined if the displacement of the magneto camshaft was a result of an improper installation or if it moved in flight.

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 due to displacement of the dual magneto's internal camshaft, which resulted in the magneto's inability to produce spark.

Findings

Aircraft	Magneto/distributor - Inoperative
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Factual Information

History of Flight

Enroute-cruise	Loss of engine power (total) (Defining event)
Landing-landing roll	Collision with terr/obj (non-CFIT)

On October 21, 2018, at 1444 eastern daylight time, a Piper PA-32R-300 airplane, N2920Q, was substantially damaged when it was involved in an accident near Indianapolis, Indiana. The pilot was not injured. The airplane was operated as a Title 14 *Code of Federal Regulations (CFR)* Part 91 personal flight.

The pilot reported that he was about 4 miles north of his destination airport, at 1,000 ft above ground level (agl), when the engine experienced a complete loss of power. He attempted to restart the engine, but was unsuccessful, and chose to perform a forced landing in a parking lot. During the landing roll, the airplane struck a curb, and the wing impacted a tree.

During examination of the engine, a Federal Aviation Administration (FAA) inspector manually rotated the single-drive dual magneto drive shaft, and the magneto failed to produce spark on any of its leads. Review of maintenance logbooks revealed that the magneto was overhauled and tested on February 8, 2018 and had accumulated 87 hours since the overhaul.

The magneto was examined and tested, during which the impulse coupling was rotated by hand and the magneto timing was tested using a timing light. When the impulse coupling was rotated to neutral position, contact points were open when they should have been closed. When impulse coupling was rotated counterclockwise about 8° to the L mark, the timing light indicated that contact points were closed when they should have been open. The magneto camshaft was displaced when viewed through magneto timing port. When the cam was positioned to neutral, the points were opened instead of being closed. When the camshaft was rotated approximately 8°, the points should have opened, but they closed at that position. Such displacement of the camshaft would cause the magneto not to produce spark. The magneto was disassembled, inspected, and reassembled, with the cam shaft installed per the manufacturer's specifications, and when subsequently tested, it produced sparks on all leads.

Pilot Information

Certificate:	Flight instructor	Age:	70,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane single-engine; Instrument airplane	Toxicology Performed:	No
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	July 20, 2017
Occupational Pilot:	No	Last Flight Review or Equivalent:	October 23, 2017
Flight Time:	5046 hours (Total, all aircraft), 3468 hours (Total, this make and model), 4821 hours (Pilot In Command, all aircraft), 34 hours (Last 90 days, all aircraft), 13 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N2920Q
Model/Series:	PA32R 300	Aircraft Category:	Airplane
Year of Manufacture:	1977	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	32R-7780266
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	March 18, 2018 Annual	Certified Max Gross Wt.:	3600 lbs
Time Since Last Inspection:		Engines:	Reciprocating
Airframe Total Time:	3788.9 Hrs as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	TIO 540
Registered Owner:		Rated Power:	300 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:	KEYE,823 ft msl	Distance from Accident Site:	4 Nautical Miles
Observation Time:	18:53 Local	Direction from Accident Site:	175°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.29 inches Hg	Temperature/Dew Point:	10°C / -2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Indianapolis, IN (UMP)	Type of Flight Plan Filed:	None
Destination:	Indianapolis, IN (EYE)	Type of Clearance:	None
Departure Time:	14:34 Local	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	39.894443,-86.304168(est)

Administrative Information

Investigator In Charge (IIC):	Smith, Maja		
Additional Participating Persons:			
Original Publish Date:	February 9, 2022	Investigation Class:	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=98525		

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](#).