



Aviation Investigation Final Report

Location:	El Reno, Oklahoma	Accident Number:	CEN13LA370
Date & Time:	June 25, 2013, 08:25 Local	Registration:	N205MC
Aircraft:	Mooney M20J	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (total)	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot stated that the engine abruptly lost power while he was practicing instrument approaches under visual flight rules. His efforts to restore engine power were unsuccessful. The pilot subsequently executed a forced landing to the center median of a roadway. A postaccident examination revealed that the dual magneto assembly was not functioning properly. Although the magneto drive shaft operated during engine crankshaft rotation, the magneto points did not open as required. A teardown examination revealed that the magneto components were worn. In addition, the threaded inserts had lifted out of the mounting block. The magneto assembly was inspected less than 1 flight hour before the accident during an engine propeller strike inspection, and the magneto block, points, and cam were replaced at that time. The accident flight was the second flight since the inspection and maintenance work had been performed. Although the magneto points might have been misaligned due to the threaded insert lifting out of the mounting block, it is unlikely that such a discrepancy would have resulted in a loss of magneto function within such a short timeframe. The magneto failure caused the loss of engine power; however, the cause of the magneto failure could not be determined.

Probable Cause and Findings

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

A loss of engine power, which resulted from the failure of the magneto assembly for reasons that could not be determined during postaccident examinations.

Findings

Aircraft	Magneto/distributor - Malfunction
Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Approach	Loss of engine power (total) (Defining event)
Emergency descent	Off-field or emergency landing
Landing	Landing gear collapse

On June 25, 2013, about 0825 central daylight time, a Mooney M20J airplane, N205MC, was substantially damaged during a forced landing following a loss of engine power near El Reno, Oklahoma. The pilot and passenger were not injured. The aircraft was registered to PWH-Air, LLC and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed for the flight, which was not operated on a flight plan. The local flight originated from Wiley Post Airport (PWA), Bethany, Oklahoma, at 0730.

The pilot stated that he was conducting practice instrument approaches under visual flight rules to the El Reno Regional Airport (RQO) when the engine lost power completely with "no sputtering, no coughing, no warning." The pilot's efforts to restore engine power were not successful. He ultimately executed a forced landing to the center median of a roadway. During the landing, the airplane encountered a drainage ditch, which caused the left main landing gear to separate and the nose landing gear to collapse.

A postaccident examination of the single drive shaft, dual magneto assembly was conducted by a Federal Aviation Administration inspector. The examination revealed that the dual magneto was not functioning properly. Although, the magneto drive shaft operated during engine crankshaft rotation, the magneto points did not open as required. Further examination noted that the magneto components were worn.

At the time of the accident, the airframe and engine had accumulated about 2,600 hours total time, with approximately 435 hours since engine overhaul. The most recent annual inspection was completed in September 2012. However, an engine propeller strike inspection was reportedly conducted less than one flight hour before the accident. The dual magneto assembly was inspected at that time. The accident flight was the second flight since that inspection and maintenance work had been performed.

The pilot reported that the magneto block, points and cam were replaced at the time of the magneto inspection. He added that the threaded inserts appeared to have lifted out of the mounting block about 1/32 inch, which would have changed the orientation of the points and possibly caused the excessive wear.

Pilot Information

Certificate:	Private	Age:	64
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	May 31, 2013
Occupational Pilot:	No	Last Flight Review or Equivalent:	November 17, 2012
Flight Time:	964 hours (Total, all aircraft), 581 hours (Total, this make and model), 916 hours (Pilot In Command, all aircraft), 3 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Mooney	Registration:	N205MC
Model/Series:	M20J	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	24-3012
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	September 1, 2012 Annual	Certified Max Gross Wt.:	2740 lbs
Time Since Last Inspection:	1 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	2600 Hrs at time of accident	Engine Manufacturer:	LYCOMING
ELT:	Installed, not activated	Engine Model/Series:	IO-360-A3B6D
Registered Owner:	On file	Rated Power:	200 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:	PWA,1300 ft msl	Distance from Accident Site:	15 Nautical Miles
Observation Time:	08:53 Local	Direction from Accident Site:	82°
Lowest Cloud Condition:	Clear	Visibility	7 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	20 knots / 25 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	180°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.89 inches Hg	Temperature/Dew Point:	29°C / 20°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Bethany, OK (PWA)	Type of Flight Plan Filed:	None
Destination:	Bethany, OK (PWA)	Type of Clearance:	Traffic advisory
Departure Time:	07:30 Local	Type of Airspace:	

Airport Information

Airport:	El Reno Municipal RQO	Runway Surface Type:	
Airport Elevation:	1420 ft msl	Runway Surface Condition:	Vegetation
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	35.472778,-98.005836(est)

Administrative Information

Investigator In Charge (IIC):	Sorensen, Timothy
Additional Participating Persons:	Jeff Kerl; FAA – Oklahoma City Flight Standards; Oklahoma City, OK
Original Publish Date:	October 27, 2014
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=87299

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