



# Aviation Investigation Final Report

<b>Location:</b>	Gilmer, Texas	<b>Accident Number:</b>	CEN12LA623
<b>Date &amp; Time:</b>	September 9, 2012, 15:00 Local	<b>Registration:</b>	N2878V
<b>Aircraft:</b>	Piper PA-28RT-201	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Loss of engine power (partial)	<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Instructional		

## Analysis

The student pilot reported that while he was performing flight maneuvers in preparation for a checkride, the engine backfired and lost partial power. He attempted unsuccessfully to regain engine power. Because he could not maintain altitude and the local terrain was tree-covered, the student pilot chose to ditch the airplane in a nearby lake. A postaccident examination of the engine revealed the No. 3 cylinder lost compression due to the seizure of the No. 3 cylinder piston rings. The No. 3 cylinder fuel nozzle was found partially clogged, which likely resulted in a lean fuel mixture and excessive heat in the cylinder and the subsequent piston ring failure. The reason for the clogged fuel nozzle could not be determined.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The partial loss of engine power due to the loss of cylinder compression. The loss of cylinder compression was the result of the No. 3 piston ring failure due to excessive heat because of the lean fuel mixture from a partially clogged fuel nozzle.

## Findings

<b>Aircraft</b>	Recip eng cyl section - Failure
<b>Aircraft</b>	Fuel injector nozzle - Damaged/degraded

## Factual Information

### History of Flight

<b>Maneuvering</b>	Loss of engine power (partial) (Defining event)
<b>Emergency descent</b>	Ditching

On September 9, 2012, approximately 1500 central daylight time, a Piper PA-28RT-201 single-engine airplane, N2878V, sustained substantial damage when it ditched into a lake following a partial loss of engine power near Gilmer, Texas. The student pilot, who was the sole occupant, was not injured. The airplane was registered to AirLease Nevada, LLC, and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as an instructional solo flight. Visual meteorological conditions prevailed and a flight plan was not filed. The flight originated from Fox Stephens Field (JXI), Gilmer, Texas, at 1400.

The student pilot stated he was practicing basic flight maneuvers in preparation to take his private pilot check ride. During a 20 degree bank turn at 1,500 feet above ground level, the engine backfired and lost partial power. The pilot attempted to regain engine power; however, his attempts were unsuccessful. The pilot could not maintain altitude, and due to the tree covered terrain surrounding the area, he elected to ditch the airplane into a lake. The airplane landed in the water and sank. The pilot was able to egress and was rescued by nearby boaters.

A review of the maintenance records revealed the Lycoming IO-360-C1C6 (serial number RL 28998-51A) engine, underwent its most recent annual inspection on October 11, 2011, at a total time of 1,011.7 hours since major overhaul. During the inspection, no abnormal engine discrepancies were noted. At the time of the accident, the engine had accumulated 1,043.2 hours since major overhaul.

On January 30, 2013, the engine was examined by the NTSB investigator-in-charge and a representative from Lycoming engines. Examination of the engine revealed the No. 3 cylinder had little to no compression when the engine crankshaft was rotated by hand. The No. 3 cylinder was removed, and the piston displayed excessive exhaust blow-by and the piston rings were seized in the ring lands. The No. 3 fuel injector nozzle was removed and found partially blocked with debris. The magnetos were functionally tested and no anomalies were noted. The spark plugs were functionally tested and no anomalies were noted. The intake box to fuel control air hose displayed black discoloration consistent with engine backfire. The cockpit mixture control lever was found in the mid-range position.

## Student pilot Information

<b>Certificate:</b>	Student	<b>Age:</b>	49, Male
<b>Airplane Rating(s):</b>	None	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 3 With waivers/limitations	<b>Last FAA Medical Exam:</b>	June 5, 2012
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	811 hours (Total, all aircraft), 26 hours (Total, this make and model), 26 hours (Last 90 days, all aircraft), 12 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Piper	<b>Registration:</b>	N2878V
<b>Model/Series:</b>	PA-28RT-201	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	28R-7918196
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	October 11, 2011 Annual	<b>Certified Max Gross Wt.:</b>	2750 lbs
<b>Time Since Last Inspection:</b>	32 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	9446 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	IO-360-C1C6
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	200 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>	GGG	<b>Distance from Accident Site:</b>	22 Nautical Miles
<b>Observation Time:</b>	14:53 Local	<b>Direction from Accident Site:</b>	150°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	9 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	20°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.05 inches Hg	<b>Temperature/Dew Point:</b>	31°C / 7°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Gilmer, TX (JXI)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Gilmer, TX (JXI)	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	14:00 Local	<b>Type of Airspace:</b>	

## 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>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	32.697776,-94.948608(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Sauer, Aaron
<b>Additional Participating Persons:</b>	Jesse Leos; Federal Aviation Administration; Dallas, TX
<b>Original Publish Date:</b>	May 9, 2013
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=85008">https://data.ntsb.gov/Docket?ProjectID=85008</a>

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