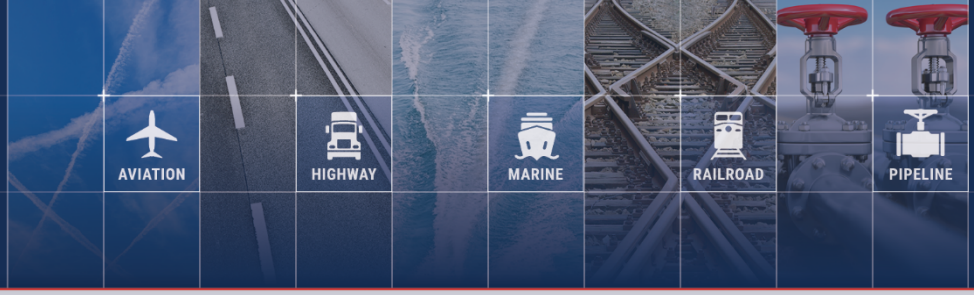

Aviation Investigation Final Report

Location:	Fairhope, Alabama	**Accident Number:**	CEN19LA265
Date & Time:	July 30, 2019, 16:30 Local	**Registration:**	N6754J
Aircraft:	Piper PA28	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor and student pilot had performed several touch-and-go landings; after the final landing, they departed for another airport. Shortly after takeoff, the engine started to vibrate severely and then lost power. The instructor performed a forced landing in a field, which resulted in substantial damage to the airplane's left wing.

Postaccident engine examination revealed a failed No. 3 cylinder exhaust valve and extensive erosion on the No. 4 cylinder exhaust valve. The engine had accumulated 2,600 hours since the last overhaul, which was 600 hours beyond the manufacturer's recommended time before overhaul.

The flight instructor reported that the leaning technique used while the airplane was on the ground was to lean the mixture during taxi or engine idle. For the engine run-up, they would use a full rich mixture. He added that during flight maneuvers at or below 3,000 ft mean sea level, they would not lean the mixture. However, the exhaust valve erosion is consistent with the engine being operated with an excessively lean fuel mixture over an extended period.

Probable Cause and Findings

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

Failure of the No. 3 exhaust valve and the subsequent loss of engine power due to engine operation with an excessively lean fuel mixture over a period of time.

Findings

Aircraft	Recip engine power section - Damaged/degraded
Personnel issues	Incorrect action performance - Pilot

Factual Information

History of Flight

Enroute	Loss of engine power (partial) (Defining event)
Emergency descent	Off-field or emergency landing

On July 30, 2019, about 1630 central daylight time, a Piper PA28-140 airplane, N6754J, conducted a forced landing after departing the H L Sonny Callahan Airport (CQF), Fairhope, Alabama. The flight instructor and student pilot were not injured, and the airplane sustained substantial damage. The airplane was registered to and operated by Lightning Aviation, LLC under the provisions of Title 14 *Code of Federal Regulations* Part 91 as an instructional flight.

The flight instructor reported that he was preparing the student pilot for his private pilot check ride and they had finished several touch-and-go landings. After the final landing, they planned to return to the Foley Municipal Airport (5R4). Shortly after take-off, the engine started a severe vibration, and then lost power. The instructor then preformed a forced landing in a cornfield, about two miles from the airport.

An examination of the airplane by a Federal Aviation Administration inspector, found damage to the airplane's left wing and engine mount. Further examination of the engine's No. 3 cylinder revealed a failed exhaust valve. The examination also found extensive erosion on the No. 4 cylinder exhaust valve. He also noted that the engine had 2,600 hours since the last overhaul, adding that the engine manufacturer's recommended overhaul is 2,000 hours, and the flight school consistently ran the engines past the recommended overhaul time.

Figure 1: Failed Exhaust valve FAA photo

The flight instructor reported that the leaning technique used while on the ground, was to lean during taxi or engine idle. For the engine runup, they would go to a full rich mixture. He added that during flight maneuvers at or below 3,000 ft msl, they would not lean the mixture.

Flight instructor Information

Certificate:	Commercial; Flight engineer	**Age:**	42
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):		**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	
Instructor Rating(s):		**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	October 1, 2017
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	1004 hours (Total, all aircraft), 300 hours (Total, this make and model), 930 hours (Pilot In Command, all aircraft)		

Student pilot Information

Certificate:		**Age:**	
Airplane Rating(s):		**Seat Occupied:**	Left
Other Aircraft Rating(s):		**Restraint Used:**	3-point
Instrument Rating(s):		**Second Pilot Present:**	
Instructor Rating(s):		**Toxicology Performed:**	No
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N6754J
Model/Series:	PA28 140	**Aircraft Category:**	Airplane
Year of Manufacture:	1968	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	28-24477
Landing Gear Type:	Tricycle	**Seats:**	
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:		**Engine Model/Series:**	O-320 SERIES
Registered Owner:	On file	**Rated Power:**	
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:	KCQF	**Distance from Accident Site:**	
Observation Time:	15:30 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	200°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.02 inches Hg	**Temperature/Dew Point:**	30°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Fairhope, AL (CQF)	**Type of Flight Plan Filed:**	None
Destination:	Foley, AL (5R4)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	30.514722,-87.871948(est)

Administrative Information

Investigator In Charge (IIC):	Hatch, Craig
Additional Participating Persons:	Peter Rose; FAA FSDO; Birmingham, AL
Original Publish Date:	February 2, 2021
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=100043