Aviation Investigation Final Report

Location:	Ebensburg, Pennsylvania	**Accident Number:**	ERA18LA032
Date & Time:	November 25, 2017, 13:45 Local	**Registration:**	N263DM
Aircraft:	Piper PA 34-220T	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	4 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot stated that the airplane's left engine had recently started to leak a significant amount of oil; however, two mechanics looked at the engine the day before the accident flight, and the source of the leak could not be located. On the day of the accident, the pilot topped off his fuel tanks and put 2 quarts of oil in the left engine, bringing the oil level up to 7 quarts. He then departed on a long cross-country personal flight. About 10 to 15 miles from the destination airport, the left engine low-oil-pressure light came on. When the airplane was 5 miles from the airport, the left engine lost total power, and the propeller feathered. The pilot chose to land downwind due to having only one working engine; however, his approach was too fast and too high, so he decided to go around. As the airplane began a shallow climb, the pilot entered a left turn to avoid mountains. While in the turn, he realized that he was not going to make it back to the airport and increased the right engine's throttle to full power. This overboosted the turbocharger-equipped engine, which stopped producing power. The airplane stalled and impacted trees.

A postaccident examination of the airplane revealed streaks of oil on the top and under the left engine cowling just aft of the oil filler door. Oil was also observed under the left wing. The left engine's oil filler cap was still on the filler neck but did not seat properly and would partially lift off the seat if it was pulled upward. The cap's locking mechanism was corroded, and the locking tangs were bent. A teardown examination of the left engine revealed that the No.1 and No. 2 connecting rods had failed, and their associated crankshaft journals displayed heat distress, consistent with oil starvation. The No.1 piston exhibited signatures of detonation. It was not determined what caused the piston to detonate, but a download of the onboard engine analyzer revealed that the cylinder head temperature was higher on that cylinder for most of the accident flight. The exact source of the oil leak could not be determined based on available evidence. The pilot made an improper decision to fly the airplane with a known oil leak, which ultimately led to the total loss of engine power due to oil starvation. Further, although the pilot decided to land downwind due to having only one working engine, the tailwind was significant, and this decision led to his attempted go-around and loss of control.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's improper decision to fly an airplane with a known oil leak, which led to a total loss of engine power due to oil starvation. Contributing to the accident was the pilot's decision to land with a tailwind, which led to his attempted go-around and subsequent loss of control.

Findings

Personnel issues	Decision making/judgment - Pilot
Aircraft	Oil - Fluid level
Personnel issues	Decision making/judgment - Pilot
Environmental issues	Tailwind - Effect on operation
Aircraft	Recip eng cyl section - Failure
Environmental issues	Tree(s) - Contributed to outcome

Factual Information

History of Flight

Approach	Loss of engine power (partial) (Defining event)
Approach-VFR go-around	Loss of control in flight
Emergency descent	Loss of engine power (total)

On November 25, 2017, about 1345 eastern standard time, a Piper PA 34-220T, N263DM, was substantially damaged when it collided with trees during a go-around at the Ebensburg Airport (9G8), Ebensburg, Pennsylvania. The private pilot and the three passengers were seriously injured. The airplane was registered to and operated by the pilot under the provisions of Title 14 Code of Federal Regulations Part 91 personal flight. Visual meteorological conditions prevailed. No flight plan was filed for the flight that originated at the Daviess County Airport (DCY), Washington, Indiana, about 1100, and destined for 9GB.

The pilot stated that the airplane's left engine had just recently started to leak a significant amount of oil; however, two mechanics looked at the engine the day before the accident flight and the source of the leak could not be located. On the day of the accident, the pilot said he topped off his fuel tanks and put two quarts of oil in the left engine, bringing the oil level up to seven quarts. He then departed for Pennsylvania. The flight was uneventful until he was about 10 to15 miles out from 9G8, when the left engine low-oil-pressure light came on. When the airplane was five miles from the airport, the left engine experienced a total loss of power and the propeller feathered. The wind at the destination airport was out of the west, so the pilot initially planned to land on runway 25; however, due to only one working engine, he elected to land downwind on runway 07. The approach ended up being too fast and too high, and the pilot decided to go-around. As the airplane began a shallow climb, the pilot entered a left turn to avoid mountains. While in the turn, the pilot realized that he was "not going to make it" back to the airport and increased the right engine's throttle to full power. He knew this would over-boost the engine and it eventually stopped producing power. The airplane stalled and impacted trees.

A postaccident examination of the airplane revealed both wings, the tail section, and the fuselage sustained substantial damage. Oil was noted on the top and underneath side of the left engine cowling flowing back from the oil filler door. Oil was also observed underneath the left wing. The flaps and landing gear were fully retracted. Flight control continuity was established for all flight control from the cockpit to their respective flight control. The fuel tank in each wing was breached from impact. The left-wing fuel selector valve was in the ON position and the fuel strainer was absent of debris. No fuel was in the bowl. The right-wing selector valve was also in the ON position, the bowl was empty, and the screen was absent of debris. Air pressure was applied to the valves and both lines were clear.

The left engine exhibited some impact damage and the three-bladed propeller remained secure to the engine. The propeller blades were feathered. An attempt was made to manually rotate the engine via the propeller, but it would only move about 20-30°. As a result, valve train continuity and compression could not be established. The fuel injectors were removed from each cylinder and were absent of debris.

Both magnetos were removed from the engine and when manually rotated, and spark was produced to each ignition lead.

The oil filler cap was on the filler neck but did not seat properly and would partially lift off the seat if it was pulled upwards. The locking mechanism of the cap was corroded, and the locking tangs were slightly bent. The oil filter was secure to the engine and removed. The element was removed, and metallic debris was observed. The oil pump was secure to the engine and removed. The pump was disassembled, and some scoring was noted on the housing. The oil quick drain plug was broken off the oil sump from impact. When the oil sump was removed, large pieces of metal were noted in the base of the engine. Some of these pieces were identified as the connecting rod caps.

A teardown examination of the engine revealed the No.1 and No. 2 connecting rods had failed and their associated crankshaft journals displayed heat distress. The No.1 piston exhibited signatures of detonation. The source of the oil leak reported by the pilot prior to the accident flight was could not be traced to any point on the engine crankcase. It was also not determined what caused the piston to detonate, but a download of the onboard electronic engine analyzer revealed that the cylinder head temperature was higher on that cylinder for most of the accident flight.

The right engine exhibited some impact damage and the three-bladed propeller remained secured to the engine. The top spark plugs, and rocker covers were removed. The engine was rotated via manual rotation of the propeller and compression and valve train continuity were established for each cylinder. Spark was produced to each ignition lead. The fuel pump was removed, and a small amount of fuel was found in the pump. The fuel was collected into a cup and it appeared light blue in color with no evidence of water or debris. The fuel manifold valve was intact and disassembled. A small amount of fuel was observed in the valve and the screen was removed. It was absent of debris.

The oil filter was intact and removed. The filter was opened, and the element was partially removed. No evidence of metal or debris was noted, and the oil was dark in color. The oil filler cap was secured to the filler neck and had a proper seat. The oil dipstick was pulled, and a small amount of oil was measured on the bottom of the stick. The oil quick drain plug was broken off the oil sump from impact. No mechanical anomalies were noted that would have precluded normal operation of the engine.

A review of maintenance records revealed that the airplane and engines' last annual inspection was conducted on May 1, 2017. At the time of the accident, the airplane had accrued a total of 3,502.3 hours. Both engines had accrued a total of 1,645 hours since major overhaul. According to Continental Motors Service Information Letter (SIL98-9C), the recommended time between overhaul for the L/TSIO 360-KB engines installed on the airplane was 1,800 hours.

Examination of the front right seat passenger's seatbelt/shoulder harness assembly revealed that it was secure to all structural attach points and the lap belt worked when manually buckled; however, the metal grommet that secured the shoulder harness to the lap belt was not fitted with a plastic bushing. The resulted in the shoulder harness not fitting securely to the lap belt. The pilots seatbelt/shoulder harness assembly was intact to all structural attach points and the lap belt worked when manually buckled. The lap belt's shoulder harness grommet had a plastic bushing and the shoulder harness seated tightly when the shoulder harness was attached. The rear forward facing seats were equipped with lap belts only and both were secure at all attach points and worked when manually buckled.

The pilot held a private pilot certificate with ratings for airplane single and multiengine land, as well as instrument airplane. His last Federal Aviation Administration (FAA) third-class medical certificate was issued on June 12, 2017. The pilot reported a total of 432 total flight hours, of which, 300 hours were in multi-engine airplanes.

Weather at John Murtha Johnstown-Cambria County Airport, about 7 miles southwest of the accident site, at 1354, was reported as wind from 260° at 16 knots gusting to 21 knots, visibility 10 miles, few clouds at 3,600 ft, overcast ceiling at 5,000 ft, temperature 11° C, dewpoint 02° C, and an altimeter setting of 29.71 inHg.

Pilot Information

Certificate:	Private	**Age:**	59,Male
Airplane Rating(s):	Single-engine land; Multi-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 With waivers/limitations	**Last FAA Medical Exam:**	June 12, 2017
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	September 3, 2016
Flight Time:	432 hours (Total, all aircraft), 277 hours (Total, this make and model), 316 hours (Pilot In Command, all aircraft), 30 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N263DM
Model/Series:	PA 34-220T 220T	**Aircraft Category:**	Airplane
Year of Manufacture:	1981	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	348133101
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	May 1, 2017 Annual	**Certified Max Gross Wt.:**	4751 lbs
Time Since Last Inspection:	47 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	3502.3 Hrs at time of accident	**Engine Manufacturer:**	CONT MOTOR
ELT:	C91 installed, not activated	**Engine Model/Series:**	LTSIO-360-KB
Registered Owner:	On file	**Rated Power:**	220 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:	JST,2284 ft msl	**Distance from Accident Site:**	
Observation Time:	13:54 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Few / 3600 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 5000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	16 knots / 21 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	260°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.7 inches Hg	**Temperature/Dew Point:**	11°C / 2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Washington, IN (DCY)	**Type of Flight Plan Filed:**	None
Destination:	Ebensburg, PA (9G8)	**Type of Clearance:**	VFR
Departure Time:	11:00 Local	**Type of Airspace:**	Unknown

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	3 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 Serious	**Latitude, Longitude:**	40.485,-78.724723(est)

Administrative Information

Investigator In Charge (IIC):	Read, Leah
Additional Participating Persons:	Michael Shannon; FAA/FSDO; Pittsburgh, PA Chris Lang; CMI; Mexico, MO Jon Hirsch; Piper; Wichita, KS
Original Publish Date:	September 27, 2019
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=96375