Aviation Investigation Final Report

Location:	Dawsonville, Georgia	**Accident Number:**	ERA17LA109
Date & Time:	February 19, 2017, 12:15 Local	**Registration:**	N99716
Aircraft:	Ercoupe 415	**Aircraft Damage:**	Substantial
Defining Event:	Collision during takeoff/land	**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot recently purchased the airplane and was returning it to his home airport. Before the flight, he added 1/2 quart of oil to the engine, bringing the oil level to between 3 1/2 and 4 quarts. About 30 minutes after departure, the pilot noticed that the oil pressure was dropping. He reduced engine power and turned the airplane toward the closest airport. The oil pressure continued to decrease, even though the engine continued to produce power, and the pilot chose to perform a precautionary landing on a road. Upon touchdown, the airplane skidded across the road until it impacted a tree and came to rest in a ditch. Examination of the engine revealed a hole in the oil sump consistent with impact damage, and oil was noted coming from the crankcase breather tube. In addition, oil was noted on the bottom of the airplane from the nose to the empennage. Even after the oil leaked from the broken oil sump and from the breather tube, the postaccident engine oil level was 3 1/2 quarts.

A subsequent engine run demonstrated that the engine would experience a momentary drop in oil pressure indication if the oil sump was overfilled. The engine and the oil pressure gauge otherwise operated normally. Since the pilot lacked operational experience with the airplane, it is likely that he unintentionally overfilled the oil sump, which resulted in an interaction between the oil in the sump and the rotating crankshaft. The interaction likely resulted in air bubbles becoming entrained in the oil and a subsequent oil pressure fluctuation. Additionally, since he checked the oil level following a previous flight, it was likely that the oil had not fully drained back into the sump when the reading was taken. Considering that the oil pressure gauge operated normally after the accident, it is unlikely that the gauge was producing a faulty reading in flight.

Probable Cause and Findings

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

A decrease in oil pressure due to the pilot's unintentional overfilling of the engine oil sump, and the pilot's subsequent decision to perform an off-airport precautionary landing, which resulted in impact with a tree.

Findings

Aircraft	Recip eng oil sys - Incorrect service/maintenance
Personnel issues	Scheduled/routine maintenance - Pilot
Personnel issues	Decision making/judgment - Pilot
Environmental issues	Tree(s) - Contributed to outcome
Personnel issues	Total experience w/ equipment - Pilot

Factual Information

History of Flight

Prior to flight	Aircraft servicing event
Enroute-cruise	Miscellaneous/other
Landing	Collision during takeoff/land (Defining event)

On February 19, 2017, about 1215 eastern standard time, an Ercoupe 415-C, N99716, was substantially damaged during a precautionary landing to a road near Dawsonville, Georgia. The private pilot sustained minor injuries. Visual meteorological conditions prevailed, and a visual flight rules flight plan had been filed for the personal flight that was operated under the provisions of 14 *Code of Federal Regulations* Part 91. The flight departed from Jackson County Airport (JCA), Jefferson, Georgia, about 1100, with the intended destination of Barwick LaFayette Airport (9A5), LaFayette, Georgia.

According to the pilot, he had recently purchased the airplane and was flying it back to his home airport. In the day and a half prior to the accident flight, the pilot cleaned oil from underneath the airplane three separate times. When he examined the engine to determine where the oil was leaking from, he only noted oil coming from the crankcase breather tube. In addition, on the afternoon prior to the accident, he checked the oil level after a morning flight and noted the oil level was down "7 ounces" from 3.5 quarts.

Then, prior to the accident flight, he added 1/2 quart of oil to bring the oil level up between 3.5 and 4 quarts. About 30 minutes after he departed, the pilot noticed the oil pressure was dropping. He reduced engine power and turned the airplane toward Lee Gilmer Memorial Airport (GVL), Gainesville, Georgia. He watched the oil pressure continue to decrease and decided to perform a precautionary landing on a road. During the landing, the left main landing gear and nose landing gear contacted a grass area to the left of the road. The airplane skidded across the road until it impacted a tree and came to rest in a ditch. The pilot then egressed from the airplane with minor injuries.

During an interview with a Federal Aviation Administration (FAA) inspector, the pilot stated that the oil pressure never went to zero and the engine was not running erratically when he made the decision to reduce engine power and perform a precautionary landing. The only indication of an issue was the loss of oil pressure and that there were no issues with oil temperature.

According to FAA records, the airplane was manufactured in 1955 and was powered by a Continental Motors C75 series, 75-horsepower engine. According to airplane maintenance logbooks, an annual inspection was performed on September 4, 2016, at a total time in service of 1,880 hours. In addition, the most recent recorded oil change occurred at that time and the oil screen was cleaned with no metallic debris noted. According to the engine manufacturer, the maximum engine oil sump capacity was 4.5 quarts. In addition, the minimum idling oil pressure was 10 psi and the oil pressure at cruise was between 30 psi and 35 psi.

Examination of the airplane by an FAA inspector revealed that both wings sustained substantial damage and fuel was noted leaking from the wings. Examination of the engine revealed a hole in the oil sump

consistent with impact damage, and oil was noted coming from the crankcase breather tube. In addition, oil was noted on the bottom of the airplane from the nose to the empennage.

Additional examination of the engine was performed at a salvage facility in Griffin, Georgia, under the supervision of an FAA inspector. The oil level was noted at 3.5 quarts before the engine run. The engine was started with no hesitation and was able to maintain an oil pressure of 45 psi. The engine was operated for about 10 minutes at various power settings. To duplicate the loss of oil pressure, 1 quart of oil was added to the engine, bringing the level up to 4.5 quarts, and it was restarted. The engine operated, the oil pressure was noted as 45 psi, however, after about 5 minutes, the oil pressure began to decrease slowly. The oil pressure settled at 25 psi for a few seconds, then gradually increased back to 45 psi, and remained there until the engine was shutdown.

According to an academic paper written by an engineer at Massachusetts Institute of Technology titled "Engine Lubrication Oil Aeration," it stated that "if the oil level is too high there is a possibility of interaction between the sump oil and the rotating crankshaft that can cause air bubbles to become entrained in the oil and increase the aeration level."

Pilot Information

Certificate:	Private	**Age:**	69,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Sport pilot With waivers/limitations	**Last FAA Medical Exam:**	January 10, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	February 6, 2017
Flight Time:	515 hours (Total, all aircraft), 3 hours (Total, this make and model), 515 hours (Pilot In Command, all aircraft), 4 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Ercoupe	**Registration:**	N99716
Model/Series:	415 C	**Aircraft Category:**	Airplane
Year of Manufacture:	1946	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	2339
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	September 4, 2016 Annual	**Certified Max Gross Wt.:**	1320 lbs
Time Since Last Inspection:	27 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1880 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	C91A installed	**Engine Model/Series:**	C-75-12
Registered Owner:		**Rated Power:**	75 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:	GVL,1275 ft msl	**Distance from Accident Site:**	14 Nautical Miles
Observation Time:	11:42 Local	**Direction from Accident Site:**	107°
Lowest Cloud Condition:	Scattered / 2800 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 3400 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	340°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.1 inches Hg	**Temperature/Dew Point:**	17°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	JEFFERSON, GA (JCA)	**Type of Flight Plan Filed:**	VFR
Destination:	LAFAYETTE, GA (9A5)	**Type of Clearance:**	VFR
Departure Time:	11:00 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	34.338333,-84.091941

Administrative Information

Investigator In Charge (IIC):	Kemner, Heidi
Additional Participating Persons:	Steven Davidson; FAA/FSDO; Atlanta, GA
Original Publish Date:	July 5, 2018
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=94724