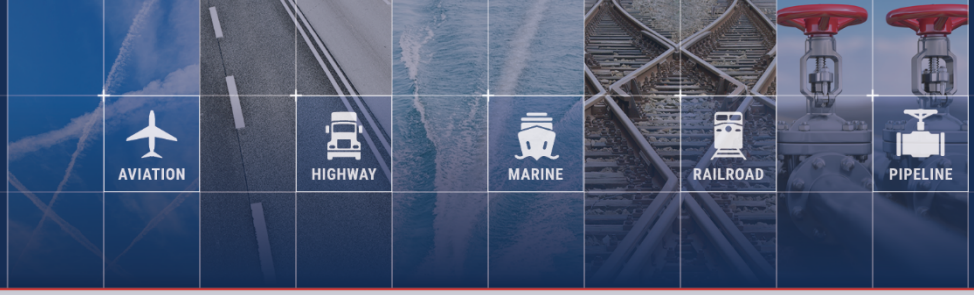

Aviation Investigation Final Report

Location:	Eureka Springs, Arkansas	**Accident Number:**	CEN18LA223
Date & Time:	June 14, 2018, 11:15 Local	**Registration:**	N9098C
Aircraft:	Aeronca 7BCM	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was conducting his first flight in the airplane that he purchased earlier the same day. The pilot stated that he did not identify any anomalies during his preflight inspection of the airplane and that the fuel tank had been topped-off before the flight. He reported that the engine started normally and that he observed no anomalies during two separate engine run-ups that he completed before takeoff. He noted that he verified full engine speed, checked proper operation of both magnetos, and cycled the carburetor heat control during both engine run-ups.

The pilot reported that after an uneventful takeoff, about 200 ft above ground level, the engine suddenly lost power. The pilot stated that the engine was partially running but was unable to produce enough thrust to sustain level flight. The pilot decided to return to the airport due to heavily wooded terrain ahead of the airplane's position. The pilot stated that he rolled the airplane into a steep left turn, and about halfway through the 180° turn, the airplane entered an aerodynamic stall at a low altitude. The pilot reported that the airplane impacted terrain in a left-wing-down, nose-down attitude. The forward fuselage, outboard left wing, and both wing struts sustained substantial damage during impact.

A postaccident wreckage examination did not reveal any evidence of mechanical malfunction that would have precluded normal operation of the airplane or its engine during the flight. The fuel samples collected after the accident were free of contamination. The cause of the partial loss of engine power could not be determined with the available evidence. It is likely that when the pilot turned back to the airport after the engine lost partial power, he did not maintain adequate airspeed and exceeded the airplane’s critical angle of attack, which resulted in an aerodynamic stall.

A review of available maintenance documentation revealed that the airplane did not have a current annual inspection. The pilot, who also held an aviation mechanic certificate with inspector authorization, did not apply for a ferry flight permit before the flight.

Probable Cause and Findings

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

The pilot's failure to maintain adequate airspeed following a partial loss of engine power after takeoff for undetermined reasons, which resulted in the airplane exceeding its critical angle of attack and an aerodynamic stall at a low altitude.

Findings

Not determined	(general) - Unknown/Not determined
Aircraft	Airspeed - Not attained/maintained
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Initial climb	Loss of engine power (partial) (Defining event)
Initial climb	Aerodynamic stall/spin
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On June 14, 2018, about 1115 central daylight time, an Aeronca 7BCM airplane, N9098C, was substantially damaged when it was involved in an accident near Eureka Springs, Arkansas. The private pilot sustained serious injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The accident occurred during the pilot's first flight after he purchased the airplane earlier that morning. He stated that the previous owner had refueled the airplane with 100 low-lead aviation fuel before he arrived at Silver Wings Field Airport, Eureka Springs, Arkansas. The airplane fuel tank had about 13 gallons of fuel before the flight. The pilot stated that he did not identify any anomalies during his preflight inspection of the airplane and brief orientation of the cockpit. He reported that the engine started normally and that he observed no anomalies during two separate engine runups that he completed before takeoff. He noted that he verified full engine speed, checked proper operation of both magnetos, and cycled the carburetor heat control during both engine run-ups. The pilot noted that his intention was to takeoff from runway 34 and initially orbit the airport before continuing toward his destination.

The pilot reported that he made an uneventful takeoff and the airplane climbed above the trees located at the end of the runway; however, shortly after clearing the trees, when the airplane was about 200 ft above ground level, the engine suddenly lost power. The pilot stated that the engine was partially running but was unable to produce enough thrust to sustain level flight. The pilot reported that he immediately decided to return to the airport because there was only heavily wooded terrain ahead of the airplane's position. The pilot stated that he rolled the airplane into a steep left turn, and about halfway through the 180° turn, the airplane entered an aerodynamic stall at a low altitude. The pilot reported that the airplane impacted terrain in a left-wing-down, nose-down attitude.

An onsite examination of the airplane was completed by an airworthiness inspector with the Federal Aviation Administration (FAA). The FAA inspector reported that the forward fuselage, outboard left wing, and both wing struts sustained substantial damage during the accident. Flight control continuity was confirmed from the cockpit controls to the individual flight control surfaces. Fuel recovered from the fuel filter assembly and carburetor float bowl was blue in color, had the odor of 100 low-lead aviation fuel, and was not contaminated.

The engine remained attached to the firewall through its mounts, but the carburetor had separated from the engine crankcase during impact. Internal engine and valve train continuity were confirmed as the engine crankshaft was rotated. Compression and suction were noted on all cylinders in conjunction with crankshaft rotation. The upper spark plugs were removed and exhibited features consistent with normal engine operation. Both magnetos produced spark as the engine crankshaft was rotated. The propeller remained attached to the engine crankshaft flange. Both propeller blades exhibited S-shape bends, blade twisting, leading-edge gouging, and chordwise burnishing. The postaccident examination of the airplane and engine did not reveal any evidence of mechanical malfunction that would have precluded normal operation.

A review of available maintenance documentation revealed that the airplane had accumulated 0.75 hours since the last annual inspection that was completed on October 21, 2016. The pilot, who also held an aviation mechanic certificate with inspector authorization, did not apply for a ferry flight permit before the flight.

Pilot Information

Certificate:	Private	**Age:**	75,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	BasicMed	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 8, 2017
Flight Time:	(Estimated) 2000 hours (Total, all aircraft), 400 hours (Total, this make and model), 10 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aeronca	**Registration:**	N9098C
Model/Series:	7BCM	**Aircraft Category:**	Airplane
Year of Manufacture:	1947	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	7BCM-372
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	October 21, 2016 Annual	**Certified Max Gross Wt.:**	1300 lbs
Time Since Last Inspection:	0.75 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1710.72 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	C91A installed, activated, did not aid in locating accident	**Engine Model/Series:**	C-85-12F
Registered Owner:		**Rated Power:**	85 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:	ROG,1359 ft msl	**Distance from Accident Site:**	20 Nautical Miles
Observation Time:	10:58 Local	**Direction from Accident Site:**	260°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	11 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	230°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.05 inches Hg	**Temperature/Dew Point:**	31°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Eureka Springs, AR	**Type of Flight Plan Filed:**	None
Destination:	Excelsior Springs, MO (PVT)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Airport Information

Airport:	Silver Wings Field Airport 55AR	**Runway Surface Type:**	Grass/turf
Airport Elevation:	1571 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	34	**IFR Approach:**	None
Runway Length/Width:	1900 ft / 65 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	36.429721,-93.695556(est)

Administrative Information

Investigator In Charge (IIC):	Fox, Andrew		
Additional Participating Persons:	Danny Brickey; Federal Aviation Administration (Little Rock FSDO); Little Rock, AR		
Original Publish Date:	May 25, 2021	**Investigation Class:**	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=97476		