Aviation Investigation Final Report

Location:	Springfield, Ohio	**Accident Number:**	CEN17FA108
Date & Time:	February 19, 2017, 16:03 Local	**Registration:**	N62888
Aircraft:	MACLEOD HOMEBUILT	**Aircraft Damage:**	Destroyed
Defining Event:	Aerodynamic stall/spin	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot departed the grass airstrip on a personal local flight in the single-seat experimental, amateur-built airplane. Two witnesses saw the airplane flying low about treetop height and then saw its nose pitch up followed by the airplane descending to ground impact. Another witness heard a loud engine, looked up, and saw the airplane in a nose dive; he heard the engine until just before the airplane impacted the ground. The witness observations were consistent with the pilot failing to maintain control of the airplane, which resulted in the airplane exceeding its critical angle of attack and an aerodynamic stall. Because the airplane was flying low, there was not enough altitude for the pilot to recover the airplane from the stall.

Examination of the airframe and engine did not reveal evidence of any preimpact mechanical malfunctions that would have precluded normal operation. The propeller blades showed no rotational damage, consistent with the engine not producing power at impact. However, a witness reported hearing the engine during descent until just prior to impact. The investigation could not determine if the engine lost power during descent or if the pilot reduced power prior to impact.

The shoulder harness assembly was found behind the forward bulkhead, unable to be accessed by the pilot. Additionally, the shoulder harness was found wrapped around the rudder cable. However, the wear on the shoulder harness was consistent with having been wrapped around the rudder cables for a while indicating it did not likely affect the operation of the rudder.

Probable Cause and Findings

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

The pilot's exceedance of the airplane's critical angle of attack, which resulted in an aerodynamic stall and loss of airplane control at an altitude too low for a safe recovery.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Airspeed - Not attained/maintained
Aircraft	Angle of attack - Not attained/maintained

Factual Information

History of Flight

Initial climb	Aerodynamic stall/spin (Defining event)
Initial climb	Loss of control in flight
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On February 19, 2017, about 1600 eastern standard time, an experimental amateur-built airplane, N62888, was destroyed when it impacted terrain about 470 ft south of a private grass airstrip in Springfield, Ohio. The private pilot was fatally injured. The airplane was privately owned and was being operated by the pilot under the provisions of Title 14 *Code of Federal Regulations* Part 91. Visual meteorological conditions prevailed for the personal local flight, and no flight plan had been filed. The flight originated from the grass airstrip at an unknown time.

Multiple witnesses saw the airplane flying low about treetop height heading east. Two witnesses stated that the airplane's nose pitched up, and then the airplane descended to the ground. One witness stated that the airplane "began to sway and lost control." Another witnesses reported that the airplane made a "spiral turn" as it descended. According to a third witness, he heard "a loud motor revving," looked up, and saw the airplane in a nose dive; he heard the engine until just before the airplane impacted the ground.

Pilot Information

Certificate:	Private	**Age:**	24,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Single
Other Aircraft Rating(s):	None	**Restraint Used:**	None
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 None	**Last FAA Medical Exam:**	August 13, 2015
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	271 hours (Total, all aircraft), 0 hours (Total, this make and model)		

The pilot held a private pilot certificate with an airplane single-engine land rating that was issued on September 20, 2015. The pilot also held an airframe and powerplant mechanic certificate. His Federal Aviation Administration (FAA) third-class medical certificate was issued August 13, 2015, with no limitations.

The pilot's logbook indicated that he had 281 hours of flight experience as of November 15, 2016, which was the date of the last entry in the logbook. According to the logbook, the pilot's flight time was mostly

accrued in Cessna 150, 172, and 182 airplanes with his most recent 10 hours accrued in a Piper Archer. No flight time had been logged in the accident airplane.

According to the airplane owner, who was the pilot's uncle, the pilot had flown the accident airplane about 10 to 15 hours. The pilot began flying the airplane while he was completing his private pilot license. Initially, his training in the home-built started with the pilot flying about 5 ft above the ground down the runway in ground effect and then landing. The owner estimated the pilot completed these "pop ups" about 50 times. Once the pilot received his private pilot license, the owner explained the pilot would fly in the local area around the grass strip for 15 to 20 minutes. During these flights, the pilot's uncle and father would fly alongside in their "motor gliders." The owner was not sure when the pilot last flew the airplane before the accident. The owner stated he had shared his knowledge of the airplane's flight characteristics (i.e., critical airspeeds, glide ratio, fast approach procedures, short-wing roll limitations, etc.) with the pilot, and the owner believed the pilot flew the airplane "very well."

Aircraft and Owner/Operator Information

Aircraft Make:	MACLEOD	**Registration:**	N62888
Model/Series:	HOMEBUILT NO SERIES	**Aircraft Category:**	Airplane
Year of Manufacture:	1976	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	JORGI-1
Landing Gear Type:	Tailwheel	**Seats:**	1
Date/Type of Last Inspection:	September 14, 2016 Condition	**Certified Max Gross Wt.:**	800 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental
ELT:		**Engine Model/Series:**	A-65-9
Registered Owner:		**Rated Power:**	65 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The airplane's experimental airworthiness certificate was issued on October 4, 1976. The airplane was a single-seat, low-wing, fixed-gear design. It was powered by a Continental Motors A-65-9 reciprocating engine and equipped with a McCauley fixed-pitch, two-bladed propeller. The airplane did not have an electrical system; the pilot had to hand prop the airplane to start the engine.

No maintenance logbooks were available for review during the investigation. The owner stated that he had completed a condition inspection on the airplane on September 14, 2016.

On the day of the accident, the pilot called the owner to discuss anomalies that he was experiencing after starting the engine. There was no oil pressure indication, and the engine was running rough. The owner stepped the pilot through how to fix the oil pressure indicator and clean the carburetor. The owner stated both issues were remedied before the pilot flew the airplane.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KSGH,1051 ft msl	**Distance from Accident Site:**	8 Nautical Miles
Observation Time:	20:56 Local	**Direction from Accident Site:**	234°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	260°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.09 inches Hg	**Temperature/Dew Point:**	14°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Springfield, OH	**Type of Flight Plan Filed:**	None
Destination:	Springfield, OH	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

The closest official weather observation station was located at Springfield-Beckley Municipal Airport (SGH), 8 miles southeast of the accident site. At 1556, the automated weather observing system at SGH reported wind from 260º at 8 knots, visibility 10 miles, temperature 14ºC, dew point 8ºC, and an altimeter setting of 30.09 inches of mercury.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	39.915554,-83.704444(est)

The wreckage was in a plowed field on the south side of the private airstrip. The airplane sustained aft crushing of the nose and forward fuselage section and impact damage to the leading edge of the right wing from the wingtip to the main gear strut. The damage appeared to be consistent with a nose-low and right wing-low attitude at ground impact.

Flight control continuity was confirmed for all flight control surfaces up to the cockpit. The ailerons and elevator were actuated using the control stick. The rudder pedals inside the cockpit were crushed by impact forces and could not be moved. The rudder cables were intact from the cockpit to the rudder attach point.

The shoulder harness assembly was found wrapped around the rudder cables in the tail section of the fuselage behind the forward bulkhead. There was wear on the shoulder harness consistent with the cables rubbing on it. The shoulder harness was not accessible to the pilot from the cockpit. Additionally, first responders reported that the lap belt was not buckled around the pilot when they arrived on scene.

The engine was rotated by hand, and thumb compression was observed on all four cylinders. The propeller hub had dirt embedded on the spinner attachment bolts. One of the propeller blades was bent rearward about 20º; the blades displayed no rotational scoring or scratching.

Both the left and right fuel tanks were breached during impact, and there was no visible fuel in either tank. The smell of auto gasoline was present at the accident site. Fuel was observed in the clear plastic tube that was the airplane's fuel quantity indicator and in the gascolator. The fuel filter in the gascolator appeared clear of debris. The fuel shutoff valve, a silver pull-handle on the instrument panel, was in the retracted (ON) position. The throttle plate was found in the full open position with no obstructions. During a subsequent examination, an FAA inspector removed and opened the carburetor. The carburetor float was intact; the gasket was intact; and the carburetor appeared to operate normally with full travel.

The left magneto switch was found in the "ON" position, and the right magneto switch was found in the "OFF" position. According to the owner, standard procedure for the airplane was to use the left magneto to start the engine and to use both magnetos when flying.

Medical and Pathological Information

The Montgomery County Coroner's Office, Dayton, Ohio, performed an autopsy of the pilot. The cause of death for the pilot was attributed to "multiple blunt force injuries."

The FAA Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, performed toxicology testing on specimens from the pilot. The toxicology results were negative for carbon monoxide, ethanol, and drugs.

Administrative Information

Investigator In Charge (IIC):	Liedler, Courtney
Additional Participating Persons:	Brian L Billups; FAA; Cleveland, OH Paul J McCowan; FAA; Cleveland, OH
Original Publish Date:	March 18, 2019
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=94751

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