Aviation Investigation Final Report

Location:	Jacksboro, Tennessee	**Accident Number:**	ERA22FA391
Date & Time:	August 29, 2022, 12:50 Local	**Registration:**	N1478E
Aircraft:	Aeronca 7AC	**Aircraft Damage:**	Destroyed
Defining Event:	Aerodynamic stall/spin	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

According to a friend, the pilot had not flown for 20 years, and purchased the accident airplane the day before the accident flight. The pilot's friend witnessed and recorded video of the accident takeoff, which revealed that the airplane became airborne and entered a slow speed, nose-high climb that continued into a left turn. The airplane then pitched nose-down and began descending while the engine could be heard operating smoothly and continuously to ground contact.

The airplane was found in a nose-down position in a field near the runway with significant damage to the engine and cockpit area. All primary flight control surfaces remained attached, and the empennage was bent upward and forward but remained partially attached. The wreckage examination did not reveal evidence of any preimpact mechanical malfunctions or failures that would have precluded normal operation.

Toxicology testing detected diphenhydramine in the pilot's cavity blood and urine. The concentration of diphenhydramine in cavity blood was reported qualitatively, indicating a level below the laboratory reporting threshold. Given the potential for postmortem redistribution and contamination in cavity blood, it is unlikely that the pilot's use of diphenhydramine contributed to the accident.

The takeoff described by the witness and video appeared consistent with entry into a low altitude aerodynamic stall. The distribution of the wreckage and relatively low energy signatures exhibited by the wreckage at the accident site were also consistent with an aerodynamic stall. Based on this information, it is likely that the pilot exceeded the airplane's critical angle of attack during the initial climb, which resulted in an aerodynamic stall, loss of control, and impact with terrain.

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 during takeoff, which resulted in an aerodynamic stall and loss of control.

Findings

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

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 August 29, 2022, about 1250 eastern daylight time, an Aeronca 7AC, N1478E, was destroyed when it was involved in an accident near Jacksboro, Tennessee. The private pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to a friend of the pilot, the pilot purchased the airplane the day before the accident. He flew the airplane from Alabama to Tennessee, and this flight was the pilot's first in 20 years. She described that on the day of the accident, he wanted to "take it up for a flight." The friend stated that the airplane took off "real early" and the airplane did not use much of the runway. After takeoff, the airplane made a sharp turn to the left and descended below the tree line. She contacted local authorities and waited for their arrival.

Review of video footage recorded by the pilot's friend showed the airplane became airborne and entered a slow speed, nose-high climb that continued into a left turn. The airplane then pitched nose-down and began descending while the engine could be heard operating smoothly and continuously to ground contact.

Pilot Information

Certificate:	Private	**Age:**	69,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	March 24, 1998
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	800 hours (Total, all aircraft), 2 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aeronca	**Registration:**	N1478E
Model/Series:	7AC	**Aircraft Category:**	Airplane
Year of Manufacture:	1946	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	7AC-5041
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	1220 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental
ELT:	Not installed	**Engine Model/Series:**	A-65-8F
Registered Owner:	On file	**Rated Power:**	65 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:	JAU,1180 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	12:55 Local	**Direction from Accident Site:**	256°
Lowest Cloud Condition:	Scattered / 2900 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.16 inches Hg	**Temperature/Dew Point:**	29°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Jacksboro, TN	**Type of Flight Plan Filed:**	None
Destination:	Jacksboro, TN	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Airport Information

Airport:	COLONEL TOMMY C STINER AIRFIELD JAU	**Runway Surface Type:**	
Airport Elevation:	1179 ft msl	**Runway Surface Condition:**	Vegetation
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	36.335478,-84.159532(est)

The airplane came to rest nose-down in a field adjacent to the runway oriented on a magnetic heading of 023°. Flight control continuity was established to all primary flight control surfaces. The nose of the airplane was crushed aft to the cockpit, and the engine and avionics instruments were destroyed by impact. The wings remained attached to the fuselage and exhibited impact damage, including accordion-style crush damage along the leading edges. The empennage was bent over the fuselage but remained partially attached.

The engine's crankshaft could not be rotated due to impact damage, and cylinder compression could not be confirmed. The spark plugs were removed for examination, and the electrodes exhibited normal wear and were dark in color when compared to a Champion Check-a-Plug chart, with no evidence of fouling. The left magneto produced spark on all leads, but the right magneto did not produce any spark due to impact damage to the impulse coupling. The oil screen was removed and was free of debris. The carburetor bowl was clean, and the float moved freely. The right side of the engine case, between the cylinders, was impact-fractured with a crack measuring about 6 inches.

Fuel was found inside the lines from the fuel pump to the carburetor. The fuel strainer was opened, and the screen was clean and unobstructed. The lever-action pumps functioned normally when operated by hand.

The examination of the airframe and engine did not reveal evidence of any preimpact mechanical malfunctions or failures that would have precluded normal operation.

Medical and Pathological Information

The Regional Forensic Center of Knox County performed the pilot's autopsy, as authorized by the Campbell County Medical Examiner. According to the pilot's autopsy report, his cause of death was multiple and massive blunt force injuries, and his manner of death was accident.

The Federal Aviation Administration (FAA) Forensic Sciences Laboratory performed toxicological testing of postmortem specimens of the pilot. Diphenhydramine, clopidogrel, and amlodipine were detected in cavity blood and urine.

Diphenhydramine is a sedating antihistamine medication widely available over the counter in multiple sleep aids and cold and allergy products. Diphenhydramine can cause cognitive and psychomotor slowing and drowsiness and often carries a warning that it may impair performance of tasks like driving and operating heavy machinery. The typical elimination half-life of diphenhydramine in plasma is about 3 to 14 hours. The FAA states that pilots should not fly within 60 hours of using diphenhydramine, to allow time for it to be cleared from circulation. Clopidogrel is a prescription medication that prevents clotting. It is used to treat patients with previous histories of heart attacks, including those who are managed medically and those who are managed with coronary revascularization, and to reduce the rate of subsequent heart attacks. It is also used to reduce the risk of recurrent strokes in patients who have had previous non-hemorrhagic strokes. Amlodipine is prescription medication commonly used to treat high blood pressure, chronic stable angina, and as part of the medical management of coronary artery disease.

Administrative Information

Investigator In Charge (IIC):	Alleyne, Eric
Additional Participating Persons:	David Alderman; FAA/FSDO; Nashville, TN
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Note:	
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