Aviation Investigation Final Report

Location:	Adrian, Missouri	**Accident Number:**	CEN21FA380
Date & Time:	August 22, 2021, 13:00 Local	**Registration:**	N70643
Aircraft:	Piper J3C-65	**Aircraft Damage:**	Substantial
Defining Event:	Aerodynamic stall/spin	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot's wife reported that he departed from their private grass runway; she did not know his destination or his expected return time and became concerned when the pilot did not return by dark. The airplane was located the next morning in the middle of a cornfield about 300 yards northwest of the runway.

The airplane came to rest in a nose-low, tail-high attitude. The wings and fuselage sustained substantial damage. Flight control continuity was confirmed throughout the airframe. Examination of the airframe and engine did not reveal any anomalies that would have precluded normal operation. The orientation of the wreckage was consistent with impact with terrain in an aerodynamic stall.

Based on negative postmortem ethanol testing results in vitreous and urine, the ethanol detected in the pilot's blood was likely from sources other than ingestion. It is unlikely that ethanol contributed to the accident. Based on negative postmortem opioid testing results in femoral blood, it is unlikely that the pilot's opioid use contributed to the accident. The pilot had cardiovascular disease, but available evidence is insufficient to determine whether he was impaired or incapacitated by that disease, and whether a medical condition contributed to the accident could not be determined.

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 control of the airplane which resulted in an aerodynamic stall and impact with terrain.

Findings

Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Unknown	Unknown or undetermined
Unknown	Aerodynamic stall/spin (Defining event)
Unknown	Collision with terr/obj (non-CFIT)

On August 22, 2021, about 1300 central daylight time, a Piper J3C-65 Cub, N70643, was substantially damaged when it was involved in an accident near Adrian, Missouri. The pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot's wife reported that he took off from their private grass runway about 1300 for a leisure flight. She did not watch him take off; nor did she hear anything. She did not know his destination or when to expect him back. Later that evening, she attempted to reach him, but she did not become concerned until dark. She drove their property and the surrounding area but did not find him or the airplane. The next morning, a friend found the airplane in the middle of a cornfield about 300 yards northwest of the private grass runway.

There were no witnesses to the accident, and no radar information associated with the accident flight.

Pilot Information

Certificate:	Private	**Age:**	71,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	None With waivers/limitations	**Last FAA Medical Exam:**	July 9, 2020
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	July 28, 2020
Flight Time:	(Estimated) 4000 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N70643
Model/Series:	J3C-65	**Aircraft Category:**	Airplane
Year of Manufacture:	1946	**Amateur Built:**	
Airworthiness Certificate:	Special light-sport (Special)	**Serial Number:**	17661
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental Motors
ELT:	Installed, not activated	**Engine Model/Series:**	O-200 SERIES
Registered Owner:	On file	**Rated Power:**	100 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:	KLRY,915 ft msl	**Distance from Accident Site:**	12 Nautical Miles
Observation Time:	12:55 Local	**Direction from Accident Site:**	24°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots / None	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	160°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.05 inches Hg	**Temperature/Dew Point:**	29°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Adrian, MO	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Unknown

Airport Information

Airport:	Private PVT	**Runway Surface Type:**	Grass/turf
Airport Elevation:		**Runway Surface Condition:**	Dry
Runway Used:	01/19	**IFR Approach:**	None
Runway Length/Width:	1700 ft / 50 ft	**VFR Approach/Landing:**	None

The private grass runway was about 1,700 ft long and 50 ft wide and was oriented north/south.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	38.4343,-94.44294

The airplane came to rest mostly intact in a nose-low, tail-high attitude, and was oriented on a heading of about 135°. Both wings were bent down, and the aft wing attachment points were fracture separated. The wingtips exhibited aft crush damage and came to rest touching the dirt. Flight control continuity was established throughout the airframe.

The engine and firewall were pushed aft and up toward the left. The left side of the engine was wedged between the wing spar and the left wing leading edge. The propeller remained attached at the hub, and the crankshaft was bent just aft of the attachment flange. Both propeller blades were mostly straight. One blade exhibited some chordwise scratching and a slight aft bend about midspan. The other blade was mostly undamaged. The spinner was pushed aft into the hub and was cracked; it did not exhibit rotational damage.

The upper spark plugs on all four cylinders were consistent with normal operations. The lower spark plugs on the right side were oil-coated consistent with how the engine came to rest; the lower left side spark plugs were inaccessible due to airframe deformation. The valve covers were removed and were unremarkable. The ignition harness exhibited some wear but was intact. Examination of the cylinders with a borescope revealed normal combustion signatures. The propeller was rotated by hand but would only rotate 270 degrees due to airframe deformation. Thumb compression was established on cylinder No. 1, and the magneto impulse coupling was heard. Piston movement in the other three cylinders was confirmed with the borescope.

The header fuel tank was empty and crushed. Borescope examination of the tank revealed a crack along its left side. The fuel strainer bowl was removed and was full of automotive fuel. Debris was noted on

the bottom of the bowl. The carburetor was fracture separated from the engine and was covered in dirt. The throttle and mixture controls remained attached. When the throttle lever was manipulated by hand, automotive fuel was ejected from the accelerator pump. The fuel was drained from the carburetor during disassembly, and debris was noted; however, whether the debris was present before the accident, or a result of impact could not be determined. The bowl was removed, and minor debris was noted at the bottom of the bowl. The carburetor's fuel inlet screen was clear of debris.

Medical and Pathological Information

The Forensic Medical of Kansas located in Kansas City, Kansas, performed an autopsy of the pilot. The pilot's cause of death was multiple blunt force injuries. NMS Labs performed toxicology testing on specimens from the pilot and detected ethanol at 0.016 g/dL in femoral blood. Ethanol was not detected in vitreous. No other tested-for substances were detected. Testing of femoral blood for opioids (hydrocodone, dihydrocodeine, morphine, hydromorphone, codeine, 6-monoacetylmorphine, oxycodone, and oxymorphone) was negative.

The Federal Aviation Administration (FAA) Forensic Sciences Laboratory performed toxicological testing on specimens from the pilot. Ethanol was not detected in vitreous or urine. Hydrocodone was detected in liver at 3 ng/mL, in brain at 2 ng/mL, and in urine. Dihydrocodeine was detected in urine but not in liver or brain. Hydromorphone and morphine were detected in urine but not brain; hydromorphone and morphine results in liver were inconclusive.

Administrative Information

Investigator In Charge (IIC):	Link, Samantha
Additional Participating Persons:	Tom Davis; Federal Aviation Administration; Kansas City, MO Kathryn Whitaker; Piper Aircraft Inc; Vero Beach, FL
Original Publish Date:	August 19, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=103743