Aviation Investigation Final Report

Location:	Valparaiso, Indiana	**Accident Number:**	CEN19FA044
Date & Time:	December 13, 2018, 10:44 Local	**Registration:**	N6785P
Aircraft:	Piper PA24	**Aircraft Damage:**	Destroyed
Defining Event:	Aerodynamic stall/spin	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was departing on a personal flight. Witness observations and surveillance video captured the airplane during the initial climb; the right wing dropped and then the airplane entered a right spin. A surveillance video from a camera mounted on a building near the accident captured the final portion of the accident sequence; the airplane completed one revolution in the spin before it impacted the ground in a near vertical attitude. Examination of the airplane, engine, and systems revealed no evidence of any preimpact anomalies. The circumstances of the accident are consistent with the pilot's failure to maintain adequate airspeed during the initial climb after takeoff, which resulted in an exceedance of the airplane's critical angle of attack and a subsequent aerodynamic stall and spin.

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 during the initial climb after takeoff, which resulted in an exceedance of the airplane's critical angle of attack and a subsequent aerodynamic stall and spin.

Findings

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

Factual Information

History of Flight

Initial climb	Aerodynamic stall/spin (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On December 13, 2018, at 1044 central standard time, a Piper PA24-250 airplane, N6785P, was destroyed when it was involved in an accident near Valparaiso, Indiana. The pilot was fatally injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

Witnesses, including a flight instructor, reported seeing the accident airplane take off from runway 9. When the airplane was a few hundred feet above the runway, the right wing dropped; the airplane entered a spin to the right and subsequently impacted the ground.

Surveillance video captured the final portion of the accident sequence. The airplane could be seen entering the frame of the video in a right bank. The airplane then entered a spin to the right, which continued until it impacted the ground in a near-vertical attitude.

Pilot Information

Certificate:	Private	**Age:**	40,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 Without waivers/limitations	**Last FAA Medical Exam:**	October 11, 2017
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	149.3 hours (Total, all aircraft), 21.1 hours (Total, this make and model), 74.3 hours (Pilot In Command, all aircraft), 27.3 hours (Last 90 days, all aircraft), 12.1 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N6785P
Model/Series:	PA24 250	**Aircraft Category:**	Airplane
Year of Manufacture:	1960	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	24-1916
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	December 5, 2018 Annual	**Certified Max Gross Wt.:**	2899 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	6065 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	C91 installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-540 SERIES
Registered Owner:	On file	**Rated Power:**	250 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:	VPZ,770 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	16:56 Local	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Clear	**Visibility**	9 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots / 15 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	140°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.09 inches Hg	**Temperature/Dew Point:**	4°C / -2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Valparaiso, IN (VPZ)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	10:44 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Porter County Rgnl VPZ	**Runway Surface Type:**	Asphalt
Airport Elevation:	770 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	09	**IFR Approach:**	None
Runway Length/Width:	7001 ft / 150 ft	**VFR Approach/Landing:**	None

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:**	41.451667,-87.004447

The airplane impacted the ground about 3,700 ft east of the approach end of runway 9 and 250 ft south of the runway centerline. The airplane was facing east and displayed crushing of the forward fuselage and the leading edges of both wings. There was wrinkling of the fuselage skin aft of the cabin. The wings and tail surfaces remained attached to the fuselage and all control surfaces remained attached. Examination of the airplane after its removal from the site revealed that all control system cables were intact from the cockpit controls to their respective control surfaces.

Examination of the engine confirmed compression and suction on the forward 4 cylinders. The aft 2 cylinders did not initially produce compression due to impact damage to the rocker arm pushrods. Removal of the rocker arms allowed the valves to close and resulted in compression and suction on the aft 2 cylinders. Crankshaft, valve train, and accessory gear continuity were confirmed during rotation of the engine. Both magnetos were broken loose from the engine accessory case and one magneto produced spark on all leads when rotated. The second magneto did not produce spark, but was impact damaged. Disassembly of the magneto confirmed that the impact fractured the ignition points' pivot block. The carburetor was fractured and the bowl was broken open; disassembly did not reveal any preimpact anomalies. The mechanical fuel pump was fractured and could not be tested, but disassembly revealed no preimpact anomalies.

The airplane was equipped with four fuel tanks. Each wing had a rubber bladder-type main fuel tank and a tip-mounted tank. All four fuel tanks were ruptured and no fuel remained. No fuel odor was detected at the site; however, it was raining during the initial on-scene examination. The fuel selector valve was found positioned to the right main fuel tank and the handle was in the corresponding detent. The two electric fuel pumps were removed from the airframe; both pumps pumped a liquid when electrical power was supplied.

Medical and Pathological Information

According to the autopsy performed by Pathologix Private Autopsy Services, Valparaiso, Indiana, the pilot's cause of death was multiple blunt force trauma.

Toxicology testing performed by the Federal Aviation Administration (FAA) Forensic Sciences Laboratory was negative for all substances.

Administrative Information

Investigator In Charge (IIC):	Brannen, John
Additional Participating Persons:	James Lobash; FAA - Dupage FSDO; Des Plaines, IL Jon Hirsch; Piper Aircraft; Vero Beach, FL Mike Childers; Textron Lycoming; Williamsport, PA
Original Publish Date:	July 13, 2020
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98768