Aviation Investigation Final Report

Location:	Newberg, Oregon	**Accident Number:**	WPR24FA004
Date & Time:	October 3, 2023, 18:47 Local	**Registration:**	N8360K
Aircraft:	Piper PA-44-180	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	2 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor , pilot receiving instruction, and the pilot-rated passenger departed in the multi-engine airplane to conduct flight training. The training syllabus for the flight included a review of stalls, slow flight, steep turns and single-engine emergencies that included minimum control airspeed (Vmc) procedures.

The pilot-rated passenger, who was seated in the right rear seat, reported that the pilot receiving instruction was at the controls and was performing a Vmc maneuver when the loss of control occurred. At the start of the maneuver, at about 5300 ft mean sea level (msl), the pilot receiving instruction was flying the airplane. The passenger stated that during the maneuver the stall horn sounded, and the airplane almost immediately went “inverted to the left.” When the airplane entered a spin, the pilot receiving instruction verbalized the steps to return the airplane to level flight/recover from the spin and subsequently requested the flight instructor take over the flight controls. Numerous witnesses reported seeing the airplane spiraling as it disappeared from view.

Vmc is the speed below which aircraft directional control cannot be maintained if the critical engine fails. During a Vmc demonstration, power is reduced on the critical engine (left) and the airplane is recovered before the loss of directional control or a stall.

Postaccident examination of the recovered airframe and engines revealed no evidence of any preimpact mechanical malfunctions or failures that would have precluded normal operation. Flight control continuity was established from the cockpit to all primary flight controls. Numerous separations were noted within the flight control system with signatures consistent

with overload separation or due to the recovery process. In addition, the passenger stated she was not aware of any mechanical issues with the airplane.

The recorded ADS-B flight track data, recorded engine data, passenger's statement, and witness interviews were consistent with the airplane having stalled and entered a spiral from which the pilots did not recover.

Probable Cause and Findings

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

The pilot receiving instruction's failure to maintain control of the airplane and the flight instructor's inadequate supervision of the flight, which resulted in a stall/spin from which they were unable to recover.

Findings

Aircraft	Directional control - Not attained/maintained
Aircraft	Angle of attack - Not attained/maintained
Personnel issues	Delayed action - Instructor/check pilot
Personnel issues	Aircraft control - Student/instructed pilot

Factual Information

History of Flight

Maneuvering	Loss of control in flight (Defining event)

On October 3, 2023, about 1847 Pacific daylight time, a Piper PA-44-180, N8360K, was substantially damaged when it was involved in an accident near Newberg, Oregon. The flight instructor and the pilot receiving instruction were fatally injured; a pilot-rated rear-seated passenger was seriously injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

A representative from the operator reported that the pilot receiving instruction had recently obtained a commercial pilot certificate with an airplane single-engine land rating and the accident flight was his first flight in his multi-engine training program. They added that it is common for the first multi-engine training flight to include slow flight, power-off stalls, power-on stalls, accelerated stalls, steep turns, and a Vmc demonstration.

The pilot-rated passenger reported that she had recently completed ground training for her multi-engine rating, and on the day of the accident flight, she had been invited to observe the multi-engine training session. During the accident flight, she was seated in the rear right seat, behind the flight instructor. With the pilot receiving instruction flying the airplane, she observed a series of maneuvers, including slow flight, emergency descent, steep turns, and stalls, followed by a Vmc demonstration. Unable to see all the airplane's flight controls from her position, she believed the airplane's left engine was set to idle, the landing gear was retracted, and the flaps were in a cruise configuration. During the Vmc demonstration, the stall warning sounded, and the airplane almost immediately went inverted to the left. Initially, the pilot receiving instruction remained on the flight controls, verbalizing the steps he was taking to try to stop the spin, but she could not understand what he was saying. The pilot receiving instruction then asked the flight instructor to take control of the airplane, which he did. The pilot receiving instruction then asked the flight instructor if he should run a checklist, and the flight instructor replied "yes." In the final seconds it became clear to the passenger that they were not going to recover and that they were going to crash. She did not recall impacting terrain. The pilot-rated passenger was not aware of any mechanical issues, but she did not participate in the preflight inspection of the accident airplane. During the accident flight, she did not notice any mechanical defects.

ADS-B data showed that the airplane departed Portland-Hillsboro Airport (HIO) at 0118:21 and ascended to 1,200 ft msl before entering a left turn. The airplane continued on a westerly

heading and ascended to an altitude of about 3,400 ft msl. At 0125:35 the airplane made a left turn to the south and ascended to an altitude of 5,300 ft msl. At 0130:46 the airplane made a left 180° turn to the north, then made a right turn to the northeast. The data showed the airplane continued on a northeast heading for about 3 minutes before a series of 360° turns to the left and right were performed. At the completion of the turns, the airplane turned to the southwest. The data showed that at 0143:48, the airplane made a left turn to the southeast. While on a southeasterly heading, the airplane's ground speed began to decrease from 133 kts. At 0145:56 the data showed the airplane's ground speed had decreased to 69 kts, at an altitude of 5,750 ft msl, and began to descend on a southeasterly heading. The last recorded ADS-B target, at 0146:38, was located about 50 ft northwest of the accident site at an altitude of 525 ft, as seen in Figure 1.

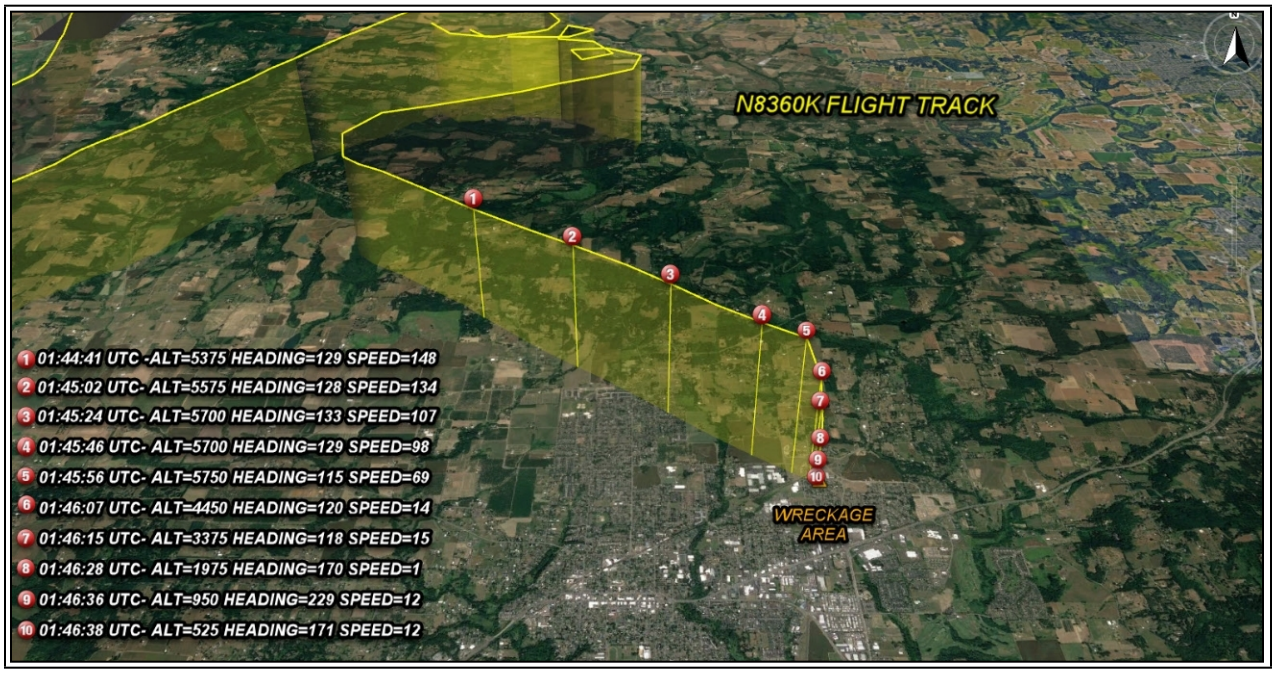

Figure 1: View of accident airplane flight track.

According to multiple witnesses near the accident site, the airplane was in level flight before it pitched downward and entered a near-vertical descent. The airplane continued in a nose-low, near-vertical descent until the airplane went out of visual range. Several witnesses described the airplane as "spinning" or "spiraling" during various phases of the vertical descent. Video recorded by one of the witnesses shows the airplane spiraling as it descended.

Flight instructor Information

Certificate:	Commercial; Flight instructor; Foreign	**Age:**	22,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	February 2, 2023
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 198 hours (Total, all aircraft)		

Student pilot Information

Certificate:	Private	**Age:**	20,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	March 7, 2023
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 197 hours (Total, all aircraft), 12 hours (Total, this make and model), 133 hours (Pilot In Command, all aircraft)		

Pilot-rated passenger Information

Certificate:	Private	**Age:**	20,Female
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	June 29, 2023
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N8360K
Model/Series:	PA-44-180	**Aircraft Category:**	Airplane
Year of Manufacture:	1981	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	44-8195018
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	June 7, 2023 Annual	**Certified Max Gross Wt.:**	3800 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	12191.1 Hrs as of last inspection	**Engine Manufacturer:**	LYCOMING
ELT:	C126 installed	**Engine Model/Series:**	O-360-E1A6D
Registered Owner:	HILLSBORO AERO ACADEMY LLC	**Rated Power:**	180 Horsepower
Operator:	HILLSBORO AERO ACADEMY LLC	**Operating Certificate(s) Held:**	Pilot school (141)

The airplane was equipped with a J. P. Instruments EDM-960 that can monitor and record multiple engine parameters related to twin-engine operations. The engine monitor was removed and sent to the National Transportation Safety Board's (NTSB) Vehicle Recorder Laboratory. The memory chip was removed from the impact-damaged unit and the data was downloaded from the EDM. The downloaded engine data included 44 sessions from July 21, 2023, to October 3, 2023. The last recorded session was identified as the accident flight. The accident recording was 48 minutes and 48 seconds long and ended shortly before the aircraft impacted terrain. The downloaded EDM data indicated the following sequence of events:

• 18:17:20 PDT: The aircraft began takeoff roll

• 18:22:20 PDT: Pressure altitude was 4072 ft

• 18:29:08 PDT: The aircraft began to climb from 4354 ft

• 18:38:20 PDT: The aircraft began a descent from 7091 ft

• 18:44:50 PDT: Engine revolutions per minute (rpm) left and right were 2358 rpm and 2366 rpm, respectively. Engine Manifold Pressure (MAP) left and right were 22.5 inHg and 22.4 inHg, respectively. Fuel flow left and right were 10.4 gph and 10.2 gph, respectively.

• 18:44:56 PDT: RPM left and right were 2335 rpm and 2326 rpm, respectively. MAP left and right were 16.1 inHg and 17.3 inHg, respectively. Fuel flow left and right were 9.1 gph and 9.4 gph, respectively.

• 18:45:08 PDT: RPM left and right were 2540 rpm and 2457 rpm, respectively. MAP left and right were 14.2 inHg and 14.7 inHg, respectively. Fuel flow left and right were 7.1 gph and 7.6 gph, respectively.

• 18:45:26 PDT: RPM left and right were 1495 rpm and 2639 rpm, respectively. MAP left and right were 4.5 inHg and 24.1 inHg, respectively. Fuel flow left and right were 1.7 gph and 10.4 gph, respectively.

• 18:45:56 PDT: Pressure altitude was 5816 ft. RPM left and right were 840 rpm and 1947 rpm, respectively. MAP left and right were 6.7 inHg and 4.4 inHg, respectively. Fuel flow left and right were 3.4 gph and 12.7 gph, respectively. The aircraft began to descend for the remainder of the recording.

• 18:46:20 PDT: The last recorded JPI EDM-960 data point. Pressure altitude was 4796 ft. RPM left and right were 0 rpm and 497 rpm, respectively. MAP left and right were 26.5 inHg and 12.2 inHg, respectively. Fuel flow left and right were 1.2 gph and 5.5 gph, respectively.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Dusk
Observation Facility, Elevation:	KUAO,196 ft msl	**Distance from Accident Site:**	9 Nautical Miles
Observation Time:	18:53 Local	**Direction from Accident Site:**	118°
Lowest Cloud Condition:	Few / 4800 ft AGL	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots / None	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	360°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.24 inches Hg	**Temperature/Dew Point:**	18°C / 13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Hillsboro, OR (HIO)	**Type of Flight Plan Filed:**	None
Destination:	Hillsboro, OR (HIO)	**Type of Clearance:**	None
Departure Time:	18:18 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 Fatal, 1 Serious	**Latitude, Longitude:**	45.31399,-122.94885

Examination of the accident site revealed that the airplane impacted a single-story residential structure, substantially damaging the fuselage and wings. The airplane came to rest in a near-vertical attitude in the residential structure, on a heading of about 285° magnetic and at an elevation of 249 ft msl. No visible ground scars were observed surrounding the wreckage. All major structural components of the airplane were located within about 10 ft of the main wreckage.

Postaccident examination of the recovered airframe and engines did not reveal evidence of any mechanical anomalies that would have precluded normal operation. Flight control continuity was established from the cockpit to all primary flight controls. Numerous separations were noted within the flight control system with signatures consistent with overload separation or due to the recovery process.

Medical and Pathological Information

An autopsy of the flight instructor and pilot receiving instruction was performed by the Oregon State Medical Examiner. The autopsy report was reviewed by the NTSB Investigator-In-Charge. According to the autopsy report, the cause of death was blunt force injuries due to a plane crash.

Toxicology testing for the flight instructor and the pilot receiving instruction was performed at the Federal Aviation Administration’s (FAA) Forensic Sciences Laboratory and found no drugs of abuse.

Additional Information

According to the FAA Airplane Flying Handbook (FAA-H-8083-3C), Vmc is the minimum control speed with the critical engine inoperative. To perform a Vmc demonstration maneuver, the handbook indicates, in part, a pilot is to reduce power on the left engine to idle, as the right engine power is advanced to a takeoff setting. As the airplane slows, a bank toward the operating engine is established and rudder pressure is used to maintain directional control. According to the handbook, "The moment the pilot first recognizes the uncontrollable yaw, or experiences any symptom associated with a stall, the pilot simultaneously retards the throttle for the operating engine to stop the yaw and lowers the pitch attitude to regain speed."

Administrative Information

Investigator In Charge (IIC):	Gutierrez, Eric
Additional Participating Persons:	Keith Ruconich; Federal Aviation Administration; Portland, OR Kathryn Whitaker; Piper Aircraft, Inc.; Vero Beach, FL Troy Helgeson ; Lycoming Engines; Williamsport, PA
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Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=193187