



Aviation Investigation Final Report

Location:	Centennial, Colorado	Accident Number:	CEN17LA122
Date & Time:	February 18, 2017, 15:29 Local	Registration:	N2702R
Aircraft:	Piper PA 28R-200	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

A flight instructor and a private pilot receiving instruction were departing for an instructional flight from runway 17L. The pilot receiving instruction reported that after liftoff, the engine rpm was high but that the airplane was not gaining altitude. The instructor reported that shortly after takeoff, he felt as if something was pushing the airplane downward. He stated that the engine had full rpm and that the throttle and mixture controls were full forward. He recalled seeing that the airspeed was about 65 knots and hearing the stall warning horn. The pilot receiving instruction reported that the airspeed was at 55 knots before he braced for impact. The airplane contacted the ground about 1 mile from the end of the runway. Landing gear track marks showed all three landing gear on the ground with a straight track until the airplane impacted a tree, after which it crossed a parking lot driveway, skidded about 100 ft, and came to rest inverted.

About 2 minutes before the airplane departed, a small jet airplane had taken off from the same runway. In addition, the winds at the time of the accident were from 170° at 15 knots, gusting to 23 knots. After the accident, the private pilot reported that he was concerned about wake turbulence from the small jet, and the flight instructor reported that he thought that the airplane was affected by wind shear. Examination of the airframe and engine did not reveal any preimpact mechanical malfunctions or failures that would have precluded normal operation. Based on the available information, the reason for the loss of control could not be determined.

Probable Cause and Findings

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

The loss of airplane control during takeoff for reasons that could not be determined based on the available information, which resulted in an aerodynamic stall and impact with terrain.

Findings

Not determined	(general) - Unknown/Not determined
Environmental issues	Tree(s) - Contributed to outcome

Factual Information

History of Flight

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

On February 18, 2017, about 1529 mountain standard time, a Piper PA28R-200 airplane, N2702R, sustained substantial damage after it impacted terrain shortly after takeoff from the Centennial Airport (APA), Centennial, Colorado. The flight instructor sustained minor injuries, and the private pilot receiving instruction sustained serious injuries. The airplane was registered to a private individual and operated by Centennial Flyers of Englewood, Colorado, and the instructional flight was being conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91. Visual meteorological conditions prevailed and a flight plan was not filed.

According to the private pilot who was seated in the left seat, the flight instructor tried to prime the engine several times while pushing the mixture back and forth several times. After the third try, the engine started, and the private pilot proceeded to prepare for takeoff on runway 17L. He stated that the airplane had difficulty obtained lift during takeoff roll. After liftoff about 75 knots, the engine RPMs remained high and power seemed sufficient, but the airplane was not gaining altitude. Toward the end of the runway, the flight instructor took over the controls and flew the aircraft past the departure end of the 10,000-ft runway, crossed over highway E-470, banked left, and then touched down in grassy area. The private pilot recalled that the airspeed was about 55 knots prior to bracing for impact with trees. He stated that the flight instructor passed out upon impact with a tree and recalled feeling that the left wing sheared off. He recalled pulling himself out of the aircraft and being transported to the hospital.

According to the flight instructor, the engine was run up to 2,000 RPMs, with positive magneto and flight control checks prior to departure. The fuel pump was ON and the mixture was leaned for takeoff. The rotation speed was about 65 knots within about a 1,000-ft ground roll. The airplane gained airspeed to about 75 to 80 knots and had a slow climb. The flight instructor verified that the flap handle was down and the flaps were visually up. Upon reaching about 150 ft altitude, he felt like something was pushing the airplane down. He stated that the engine seemed to have full RPMs and the throttle and mixture were full forward. He stated that he recalled seeing the airspeed at 65 knots and heard a stall warning horn when the airplane contacted the ground.

In an interview after the accident, the private pilot stated that a Falcon Jet took off on runway 17L, about 2 minutes prior to takeoff, and he was concerned about wake turbulence. The flight instructor stated that he was not concerned about the possible wake turbulence because of the wind conditions at takeoff. The flight instructor reported that he thought that the airplane's climbout was affected by a wind shear.

The accident site revealed that aircraft landed in grassy area heading approximately 120°, about 1 mile west of APA. Landing gear track marks showed all three landing gear on the ground with a straight track

until impact with a tree. After impact with the tree, the airplane crossed a parking lot driveway, skidded 100 ft, and came to rest inverted.

The airplane wreckage was transported to a secure facility to be examined. During the examination, the throttle, propeller, and mixture controls functioned normally. The engine rotated freely and all cylinders produced compression. The magnetos produced spark at all spark plug terminals. The engine oil screen was found clean. After the visual inspection, the engine was successfully run on the airframe throughout its operating range. The elevator, aileron, and rudder cables were found intact and functional except for impact related damage.

Flight instructor Information

Certificate:	Airline transport; Flight instructor	Age:	58, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Lap only
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine	Toxicology Performed:	No
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	September 16, 2014
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 7400 hours (Total, all aircraft), 17 hours (Total, this make and model), 1 hours (Last 24 hours, all aircraft)		

Pilot-rated passenger Information

Certificate:	Private	Age:	Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Lap only
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Without waivers/limitations	Last FAA Medical Exam:	September 24, 2014
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 166 hours (Total, all aircraft), 1 hours (Total, this make and model), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N2702R
Model/Series:	PA 28R-200 200	Aircraft Category:	Airplane
Year of Manufacture:	1968	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	28R-35252
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	January 1, 2017 Annual	Certified Max Gross Wt.:	2600 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	3436 Hrs at time of accident	Engine Manufacturer:	LYCOMING
ELT:	Installed, not activated	Engine Model/Series:	I0360 SER
Registered Owner:		Rated Power:	200 Horsepower
Operator:		Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	APA, 5793 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	15:30 Local	Direction from Accident Site:	180°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	Broken	Visibility (RVR):	
Wind Speed/Gusts:	15 knots / 23 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	170°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.63 inches Hg	Temperature/Dew Point:	17°C / 6°C
Precipitation and Obscuration:			
Departure Point:	Centennial, CO (APA)	Type of Flight Plan Filed:	None
Destination:	Centennial, CO (APA)	Type of Clearance:	None
Departure Time:		Type of Airspace:	Class E

Airport Information

Airport:	Centennial APA	Runway Surface Type:	Asphalt
Airport Elevation:	5885 ft msl	Runway Surface Condition:	Dry
Runway Used:	17L	IFR Approach:	None
Runway Length/Width:	10000 ft / 100 ft	VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious, 1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Serious, 1 Minor	Latitude, Longitude:	39.569999,-104.849441(est)

Administrative Information

Investigator In Charge (IIC):	Lemishko, Alexander
Additional Participating Persons:	John Hughes; FAA FSDO; Denver, CO Troy Helgenson; Lycoming Engines; Williamsport, PA
Original Publish Date:	April 13, 2020
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=94830

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