Aviation Investigation Final Report

Location:	Santa Maria, California	**Accident Number:**	WPR20LA152
Date & Time:	May 20, 2020, 10:43 Local	**Registration:**	N883PJ
Aircraft:	Cirrus SR20	**Aircraft Damage:**	Destroyed
Defining Event:	Aerodynamic stall/spin	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The student pilot was making his second solo cross-country flight. Following an initial straight-in approach to runway 30, he executed a go-around and entered a left traffic pattern for another approach.

Flight track data revealed that when the airplane was about two-thirds of the way along an extended downwind leg, it leveled off temporarily about 1,700 ft mean sea level (about 1,440 ft above the ground). Shortly thereafter, the airplane started a left turn and gradual descent. The rate of descent increased as the airplane made a continuous, steepening left turn through the base leg. The airplane crossed the final leg in a steep left turn at a descent rate of about 2,000 ft per minute, made an abrupt right turn, and descended rapidly until the track ended in the vicinity of the accident site about 2 nautical miles short of the runway threshold. All communications with air traffic control were normal, and the pilot did not transmit any distress calls.

A witness observed the airplane flying lower than normal airplane traffic and appearing to wobble. Another witness observed the airplane with its wings perpendicular to the ground; the airplane straightened out, wobbled, and descended out of view. Several other witnesses reported hearing a loud noise, and two of them reported looking toward the direction of the sound and observing the airplane in a steep dive with a parachute trailing behind it.

Examination of the accident site revealed that the airplane impacted in a nose-low attitude and came to rest inverted; a postimpact fire ensued, destroying a large portion of the airplane. A postaccident airframe and engine examination did not reveal any anomalies that would have precluded normal operations.

The witness observations and the flight track data are consistent with the pilot losing control of the airplane during a steep descending turn from the base leg to the final leg of the traffic pattern, which resulted in exceedance of the airplane's critical angle of attack and the airplane experiencing an aerodynamic stall.

The parachute rocket and deployment bag were found about 58 yards from the main wreckage. The parachute straps were extended from the airplane, and the parachute came to rest about 21 yards from the main wreckage. The positions of the rocket, bag, and parachute and the loud noise heard by the witnesses are consistent with the pilot deploying the parachute just before impact. Given the low altitude and high descent rate at the time of deployment, the parachute likely did not have time to inflate.

Postmortem toxicology testing of specimens from the pilot was positive for ethanol in the blood and brain at low concentrations and chlorpheniramine in the blood and liver at low concentrations. Given the low concentrations of ethanol and the lack of ethanol in the liver, it is likely the identified ethanol was from sources other than ingestion and did not contribute to the accident. In addition, given the low concentrations of chlorpheniramine, it is unlikely that the effects from the pilot's use of chlorpheniramine contributed to the accident.

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 a steep and descending turn to final approach, which resulted in an aerodynamic stall and loss of control.

Findings

Aircraft	Airspeed - Not attained/maintained
Aircraft	Angle of attack - Not attained/maintained
Personnel issues	Aircraft control - Student/instructed pilot

Factual Information

History of Flight

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

On May 20, 2020, about 1043 Pacific daylight time, a Cirrus SR20 airplane, N883PJ, was destroyed when it was involved in an accident near Santa Maria, California. The student pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the pilot's flight instructor, the student pilot was making a solo cross-country flight from Van Nuys, California, to Santa Maria. Air traffic control personnel reported that the pilot contacted the local controller requesting a full stop landing. The pilot was instructed to proceed straight in for runway 30. The airplane touched down on the runway surface, and the pilot initiated a go-around. The controller instructed the pilot to enter left traffic for the runway, and the pilot acknowledged. The controller also informed the pilot of nearby traffic and instructed him to follow that traffic and land behind it. The pilot reported that the traffic was in sight, and the controller cleared the pilot to land. There was no further radio communication with the pilot.

Radar and automatic dependent surveillance-broadcast data showed that the airplane approached the airport from the southeast. The airplane made a straight-in approach to runway 30 and appeared to touch down on the runway and then take off. The airplane climbed and entered a left traffic pattern for the runway. When the airplane was about two-thirds of the way along an extended downwind leg, it leveled off temporarily about 1,700 ft mean sea level (about 1,440 ft above the ground). Shortly thereafter, the airplane started a left turn and began a gradual descent. The rate of descent increased as the airplane made a continuous, steepening left turn through the base leg. The airplane crossed the final leg in a steep left turn at a descent rate of about 2,000 ft per minute and then made an abrupt right turn. The airplane descended rapidly until the track ended in the general vicinity of the accident site.

One witness reported that the airplane appeared lower than normal airplane traffic, and he noticed the airplane was "wobbling." The engine power increased temporarily then decreased, and the airplane "wobbled" again as he lost sight of it. Another witness observed the airplane with its wings perpendicular to the ground; the airplane straightened out, wobbled, and descended out of view. A third witness heard a "loud hissing sound," which sounded like a "large bottle rocket." He looked up and saw the airplane as it "violently veered left like a corkscrew." Several other witnesses reported hearing a loud noise, and two of them reported looking towards the direction of the sound and observing the airplane in a steep dive with a parachute trailing behind it.

Student pilot Information

Certificate:	Student	**Age:**	38,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	December 24, 2019
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 49 hours (Total, all aircraft), 49 hours (Total, this make and model), 4 hours (Pilot In Command, all aircraft)		

The pilot's flight instructor reported that the student pilot started flight training in September 2019. At the time of the accident, the student pilot had about 50 hours of flight experience, most of which were in the accident airplane. His first solo was on March 19, 2020. The flight instructor and student pilot conducted two cross-country flights to Santa Maria, and the student pilot flew there solo on May 14, 2020. The accident flight was along the same route and was the student pilot's third solo flight. The flight instructor characterized the student pilot as an above average student.

Aircraft and Owner/Operator Information

Aircraft Make:	Cirrus	**Registration:**	N883PJ
Model/Series:	SR20 No Series	**Aircraft Category:**	Airplane
Year of Manufacture:	2002	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1217
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	January 20, 2020 Annual	**Certified Max Gross Wt.:**	3000 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2863 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	C91A installed, not activated	**Engine Model/Series:**	IO-360 SERIES
Registered Owner:	On file	**Rated Power:**	220 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:	SMX,261 ft msl	**Distance from Accident Site:**	3 Nautical Miles
Observation Time:	10:51 Local	**Direction from Accident Site:**	133°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots / 15 knots	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	290°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.12 inches Hg	**Temperature/Dew Point:**	19°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Van Nuys, CA (VNY)	**Type of Flight Plan Filed:**	VFR
Destination:	Santa Maria, CA (SMX)	**Type of Clearance:**	VFR
Departure Time:	09:35 Local	**Type of Airspace:**	Unknown

Airport Information

Airport:	Santa Maria Public Airport SMX	**Runway Surface Type:**	Asphalt
Airport Elevation:	261 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	30	**IFR Approach:**	None
Runway Length/Width:	8004 ft / 150 ft	**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	34.893054,-120.454719(est)

According to the Federal Aviation Administration (FAA) inspector who responded to the scene of the accident, the airplane came to rest in a school playground about 2 nautical miles southeast of the threshold of runway 30. The FAA inspector reported that the airplane impacted in a nose-low attitude and came to rest inverted, and a postimpact fire ensued. The parachute rocket and deployment bag were found about 58 yards southwest of the main wreckage. The parachute straps were extended from the airplane, and the parachute came to rest about 21 yards northeast of the main wreckage.

The forward fuselage, cabin, wings, and the forward portion of the aft fuselage exhibited extensive crush and thermal damage. The aft fuselage and empennage exhibited thermal and impact damage. The engine and firewall were fracture-separated from the airframe and exhibited extensive thermal damage. The propeller hub was fracture-separated from the crankshaft and came to rest near the right side of the fuselage. All three metal propeller blades remained attached to the hub and exhibited extensive thermal damage. One propeller blade was relatively straight; the second blade was bent aft about midspan; and the third blade was bent aft with the outboard portion twisted.

Examination of the wreckage after it was recovered from the accident site revealed that the flight control cables were fragmented; however, flight control continuity was established from the elevator and rudder surfaces to the aft fuselage turnbuckles. The console aileron actuation pully was present along with a length of aileron control cable. In addition, aileron control cable fragments and associated pulleys were visually examined except for the left cross-over pulley which wasn't observed. The cabin control yokes, and rudder pedal assemblies were fracture-separated and found loose within the wreckage.

A portion of firewall was crushed into the aft portion of the engine, and the engine sustained extensive thermal damage. The induction system, fuel control unit, fuel manifold, and fuel injection lines were crushed forward. The forward portion of the crankcase, crankshaft, camshaft, and the No. 6 cylinder assembly were fracture-separated from the engine. The upper spark plugs from all cylinders were removed and displayed signatures consistent with normal operations. Borescope examination revealed organic debris and rust/corrosion in all the cylinders consistent with firefighting efforts. The appearance of the piston heads, cylinder walls, valve heads, and lower spark plugs was consistent with normal operations. Both magnetos were fracture separated from the engine at their mounts, and the ignition harness sustained extensive thermal damage. The throttle arm on the fuel control unit remained secured and could be manipulated by hand. The engine driven fuel pump was fracture-separated. The mixture arm remained secured to the fuel pump; however, it was bent consistent with impact damage and could not be manipulated by hand.

Postaccident examination revealed no anomalies with the airframe or engine that would have precluded normal operations.

Medical and Pathological Information

The Santa Barbara County Sheriff – Coroner, Santa Barbara, California, performed an autopsy on the pilot's remains. The autopsy report listed the cause of death as multiple traumatic injuries.

The FAA Forensic Sciences Laboratory performed forensic toxicology on specimens from the pilot with positive results for ethanol in the blood and brain and chlorpheniramine in the blood and liver.

Ethanol is a social drug commonly consumed by drinking beer, wine, or liquor. It acts as a central nervous system depressant and impairs judgment, psychomotor functioning, and vigilance. Ethanol is water soluble, and after absorption, it quickly and uniformly distributes throughout the body's tissues and fluids. The distribution pattern parallels water content and blood supply of the tissue. Ethanol can be produced after death by microbial activity.

Chlorpheniramine is used to temporarily relieve symptoms of allergies and colds such as runny nose or watery eyes. It is available in over-the-counter cold medications. Product packaging for chlorpheniramine includes the warning that drowsiness may occur and to use caution when driving a motor vehicle or operating machinery. The FAA provides guidance on wait times before flying after using this medication.

Administrative Information

Investigator In Charge (IIC):	Link, Samantha
Additional Participating Persons:	Frank Motter; Van Nuys FSDO; Van Nuys, CA Brad Miller; Cirrus Aircraft; Duluth, MN Kurt Gibson; Continental Motors; Mobile, AL
Original Publish Date:	June 21, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=101312