



Aviation Investigation Final Report

Location:	Charles Town, West Virginia	Accident Number:	ERA16LA070
Date & Time:	December 16, 2015, 09:35 Local	Registration:	N614CD
Aircraft:	CIRRUS DESIGN CORP SR20	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The student pilot and flight instructor were practicing maneuvers, followed by takeoffs and landings. After successfully practicing slow flight, the student performed a power-off stall by slowly elevating the nose until the airplane stalled. The airplane banked right, and the student let go of the stick while applying full left rudder. The airplane then rolled over to the right and began to spin nose down. After two rotations, the flight instructor activated the airplane's parachute system. The student added that he had practiced turning stalls on at least two previous occasions in a different make and model airplane and that, in that airplane, it was easy to recover from those stalls. The flight instructor provided a similar statement about the accident sequence. During the landing, the airplane sustained substantial damage to the right wing and right elevator.

Examination of the wreckage did not reveal any evidence of preimpact mechanical malfunctions that would have precluded normal operation. The roll trim, pitch trim, and aileron-rudder interconnect were all in their proper positions. Further, the airplane was last flown 4 days before the accident flight by the operator's chief flight instructor. He reported that the previous flight included both power-on and power-off stalls and that he did not notice anything unusual about the airplane or its handling characteristics during that flight.

The student had not flown for about 2 months before the accident and had accrued only 1 flight hour during the 90-day period before the accident. He had accumulated a total flight experience of 81 hours, of which 19 hours were in the accident airplane make and model. Data downloaded from the primary flight display, autopilot computer, and a multifunction display revealed that there was right yaw before the stall. It is likely that the student did not adequately control yaw before the stall due to his lack of recent experience and lack of experience in the make and model airplane, which resulted in a right roll and spin. Additionally, the instructor did not correct the yaw before the stall and did not recover the airplane as it began to enter a spin.

Probable Cause and Findings

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

The flight instructor's inadequate remedial action and the student pilot's failure to maintain yaw control while practicing a stall, which resulted in an unintentional spin.

Findings

Personnel issues	Delayed action - Instructor/check pilot
Personnel issues	Aircraft control - Student/instructed pilot
Personnel issues	Monitoring other person - Instructor/check pilot
Aircraft	Yaw control - Not attained/maintained

Factual Information

History of Flight

Maneuvering	Simulated/training event
Maneuvering	Loss of control in flight (Defining event)
Maneuvering	Aerodynamic stall/spin
Uncontrolled descent	Miscellaneous/other

On December 16, 2015, at 0935 eastern standard time, a Cirrus SR20, N614CD, was substantially damaged during impact with terrain, after deployment of the Cirrus Airplane Parachute System (CAPS), following a loss of control near Charles Town, West Virginia. The flight instructor and student pilot were not injured. Visual meteorological conditions prevailed and no flight plan was filed for the instructional flight that departed Leesburg Executive Airport (JYO), Leesburg, Virginia, about 0915, destined for Winchester Regional Airport (OKV), Winchester, Virginia. The airplane was operated by Atlantic Airways under the provisions of Title 14 Code of Federal Regulations Part 91.

According to the flight instructor, the training flight was planned to include slow flight, stalls, simulated engine failure, and landings. The student pilot was at the controls for the duration of the flight. The takeoff and climb out were normal, and after climbing to a suitable altitude they practiced slow flight before transitioning to a power-off stall exercise. They began the exercise with a descent and increased airspeed to 75 knots, and upon reaching about 3,800 feet msl the student pilot reduced the power to idle, and began to pitch the nose up. Just after the airplane stalled, the student pilot began the recovery. As the airplane pitched downward, it also rolled to the right. The instructor felt the student pilot input left rudder (the flight instructor had his feet on the rudder pedals in order to monitor the student pilot's inputs) which initially reduced the roll, but then the airplane again rolled to the right and entered a spin. After about two rotations, the instructor activated the CAPS. The flight instructor reported a total flight experience of 1,747 hours; of which, 131 hours were in the same make and model as the accident airplane.

The student pilot reported that he had not flown for about 2 months and the lesson plan for the day was to practice maneuvers, followed by takeoffs and landings. He first practiced slow flight with flaps fully extended and the stall horn sounding. He then performed a power-off stall by slowly elevating the nose until the airplane stalled. The airplane banked to the right and the student pilot let go of the stick while applying full left rudder. The airplane then rolled over to the right and began to spin nose down. The student pilot added that he had practiced turning stalls on at least two previous occasions in a Cessna 172 and that airplane was easily returned to straight and level flight by applying opposite rudder, full power and neutralizing the ailerons. The Cirrus began to spin so quickly that it seemed like something broke. The student pilot reported a total flight experience of 81 hours; of which, 19 hours were in the same make and model as the accident airplane. The student pilot had flown 1 hour during the 90-day period preceding the accident.

The airplane descended under canopy into a wooded area and came to rest in an approximate 30 degrees nose down and 45 degrees left wing down attitude.

Examination of the wreckage by a Federal Aviation Administration (FAA) inspector revealed substantial damage to the right wing leading edge, the nose landing gear, and the right elevator. Flight control continuity was established from the cockpit controls to the control surfaces. The flap control was found in the 50% indicated position, and the flaps were partially deployed. The parachute remained attached to the airplane through its harness, and the canopy remained in the trees. Further examination of the wreckage by an FAA inspector and representative from the airplane manufacturer did not reveal any preimpact mechanical malfunctions with aileron and roll trim control, elevator and pitch trim control, or rudder and rudder-aileron interconnect. The roll trim motor was in an approximate neutral roll trim position. The pitch trim motor was in a slight nose-up pitch trim position. The rudder-aileron interconnect bungee was positioned evenly in the rudder-aileron interconnect arm bungee clamp and evenly spaced between the two cable clamps near the swage of the cable terminal on each end of the right aileron cable turnbuckle.

Prior to the accident flight, the airplane was last flown on December 12, 2015, by the chief flight instructor for the operator. He reported that the previous flight was an instructional flight that included both power-on and power-off stalls. The chief flight instructor added that he did not notice anything unusual about the airplane or its handling characteristics during that flight.

The primary flight display, autopilot computer, and a memory card from the multifunction display were sent to the National Transportation Safety Board Vehicle Recorders Laboratory, Washington, D.C., for data recovery. The data was plotted and also used for an animation of the stall preceding the spin. Review of the plots and animation revealed that there was right yaw prior to the stall.

Flight instructor Information

Certificate:	Commercial; Flight instructor	Age:	47, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):		Restraint Used:	4-point
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	Toxicology Performed:	No
Medical Certification:	Class 1 Without waivers/limitations	Last FAA Medical Exam:	October 2, 2015
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	1747 hours (Total, all aircraft), 131 hours (Total, this make and model), 1634 hours (Pilot In Command, all aircraft), 44 hours (Last 90 days, all aircraft), 23 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	None	Age:	61, Male
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	4-point
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	None	Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	81 hours (Total, all aircraft), 19 hours (Total, this make and model), 3 hours (Pilot In Command, all aircraft), 1 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CIRRUS DESIGN CORP	Registration:	N614CD
Model/Series:	SR20	Aircraft Category:	Airplane
Year of Manufacture:	2004	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	1473
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	April 1, 2015 100 hour	Certified Max Gross Wt.:	3000 lbs
Time Since Last Inspection:	60 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	1745 Hrs at time of accident	Engine Manufacturer:	CONT MOTOR
ELT:	C91A installed, activated, did not aid in locating accident	Engine Model/Series:	IO-360
Registered Owner:	THUNDERBOLT AVIATION LLC	Rated Power:	200 Horsepower
Operator:	Atlantic Airways	Operating Certificate(s) Held:	Pilot school (141)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KJYO,389 ft msl	Distance from Accident Site:	19 Nautical Miles
Observation Time:	09:35 Local	Direction from Accident Site:	121°
Lowest Cloud Condition:	Scattered / 2700 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	3 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	80°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.12 inches Hg	Temperature/Dew Point:	10°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	LEESBURG, VA (JYO)	Type of Flight Plan Filed:	None
Destination:	WINCHESTER, VA (OKV)	Type of Clearance:	None
Departure Time:	09:15 Local	Type of Airspace:	Class E

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	39.238887,-77.906387

Administrative Information

Investigator In Charge (IIC):	Brazy, Douglass
Additional Participating Persons:	Robert Jeeter; Federal Aviation Administration; Baltimore, MD Brannon Mayer; Cirrus Design Corp; Duluth, MN
Original Publish Date:	November 15, 2018
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=92457

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).