



National Transportation Safety Board Aviation Accident Final Report

Location:	Apex, NC	Accident Number:	ERA17FA123
Date & Time:	03/08/2017, 1537 EST	Registration:	N30BJ
Aircraft:	JORDAN BRUCE C PITTS S2E	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot was returning to the airport from a local personal flight in the airplane. The airplane approached runway 9 at an angle before rolling inverted, descending, and impacting terrain, consistent with an aerodynamic stall. A review of weather conditions revealed that, on final approach, the airplane likely experienced a tailwind of about 9 knots with wind gusts as high as 20 knots. Pilots familiar with the airport reported that, due to the slope of the runway, pilots preferred to land on runway 9 unless there was a tailwind of more than 10 knots. Postaccident examination of the airplane and engine revealed no evidence of mechanical malfunctions or anomalies that would have precluded normal operations. It is likely that, while maneuvering on final approach to the runway with a gusting tailwind, the pilot failed to maintain control of the airplane, which resulted in the exceedance of the airplane's critical angle of attack and an aerodynamic stall.

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 airplane control during the final approach to the runway in gusting tailwind conditions, which resulted in the airplane exceeding its critical angle of attack and an aerodynamic stall.

Findings

Aircraft	Performance/control parameters - Not attained/maintained (Cause) Angle of attack - Not attained/maintained (Cause)
Personnel issues	Aircraft control - Pilot (Cause)
Environmental issues	Tailwind - Effect on operation (Cause) Gusts - Effect on operation (Cause)

Factual Information

HISTORY OF FLIGHT

On March 8, 2017, at 1537 eastern standard time, an experimental amateur-built Pitts S2E, N30BJ, was substantially damaged after it impacted trees and terrain while on approach to Cox Airport (NC81), Apex, North Carolina. The commercial pilot was fatally injured. The airplane was registered to and operated by the pilot under the provisions of Title 14 *Code of Federal Regulations* Part 91. Visual meteorological conditions prevailed, and no flight plan was filed for the personal local flight, which originated about 1500.

According to witnesses, the airplane was descending on approach to runway 9 at NC81. One witness reported that, when the airplane passed overhead, the engine "sounded like it was running perfectly." Another witness reported seeing the airplane approaching the runway at an angle before the airplane went out of her line of sight. A third witness stated that the airplane "rolled inverted" before it impacted a field about 300 feet short of the threshold of runway 9. Several witnesses reported that they heard two "booms."

PERSONNEL INFORMATION

According to Federal Aviation Administration (FAA) records, the pilot held a commercial pilot certificate with ratings for airplane single-engine land and instrument airplane. The pilot was issued an FAA third-class medical certificate on October 17, 2016. According to the pilot's logbook, he had accumulated a total of 1,933.2 hours of flight time. In the previous year, he had accumulated 9.4 hours of flight time, all of which were in the accident airplane.

AIRCRAFT INFORMATION

According to FAA records, the two-place biplane was issued an airworthiness certificate on January 23, 2009. It was equipped with a 190-horsepower Lycoming HIO-360 series engine that drove a two-bladed Hartzell constant speed propeller. According to the airplane's maintenance logbooks, a condition inspection was completed on October 17, 2016, at a total time of 92.7 hours. Since that time, the pilot had flown the airplane for a total of 3.7 hours.

METEOROLOGICAL INFORMATION

At 1537, Raleigh-Durham International Airport (RDU), Raleigh, North Carolina, located about 9 miles north of the accident location, reported the 2-minute average wind from 292° at 9 knots and the 5-second maximum average wind from 297° at 15 knots.

The observations from surrounding airports around the accident time indicated gusty surface wind conditions from the west through north. Wind gusts as high as 20 knots from 287° were observed as close as 12 minutes before the accident time at RDU.

The model sounding created for the accident site at 1500 indicated a surface wind from 295° at 10 knots with the wind remaining northwesterly through 10,000 ft. The wind increased in speed to 15 knots by 2,500 ft and to 30 knots by 9,000 ft. Light low-level wind shear was

possible between the surface and 700 ft, and light to moderate clear-air turbulence was possible above 5,000 ft..

AERODROME INFORMATION

NC81 was a private airport located about 1 mile north of Apex, North Carolina, and it did not have an operating control tower. The airport was equipped with a turf runway designated as 9/27, which was 2,450 ft long by 75 ft wide. The airport elevation was 455 ft above mean sea level.

According to local pilots familiar with NC81, because of the sloped runway, some pilots would land with up to a 10-knot tailwind on runway 9 before they would decide to land into the wind on runway 27. The pilot's son stated that the pilot used runway 9 about 90% of the time, and, only used runway 27 if there was a strong wind.

WRECKAGE AND IMPACT INFORMATION

The airplane impacted a pine tree before impacting the ground and came to rest, partially inverted, on the left wing. The fuselage was oriented on a 150° heading, and a ground scar was located about 15 ft before the main wreckage. A debris field began some distance beyond the pine tree and extended about 240 ft long on a 90° heading. Flight control continuity was confirmed from the cockpit to all the flight control surfaces. The lower left wing was bent aft, and the outboard section was separated and scattered along the debris path. A section of the lower left wingtip was located in the vicinity of the initial tree strike. The upper left wing was partially separated. The right wings remained attached to the fuselage and were bent forward. The empennage remained attached to the fuselage. The right horizontal stabilizer and right elevator were undamaged. The vertical stabilizer and rudder remained attached to the empennage, incurred skin damage, and were slightly bent. The left horizontal stabilizer and left elevator remained attached to the empennage, and the outboard sections of both the left horizontal stabilizer and left elevator were bent in a positive direction.

The propeller remained attached to the engine, and both blades exhibited chordwise scratching. In addition, one blade displayed leading edge gouging, and the other blade exhibited tip tearing and blade curling.

The engine remained attached to the airframe and was removed to facilitate further examination. The top cowling was removed, and several pine needles were noted on top of the cylinders, consistent in appearance with those found on the pine tree at the beginning of the wreckage path. The bottom section of the cowling was crushed upward by impact. Engine crankshaft continuity was confirmed from the propeller flange to the accessory section of the engine. All cylinders remained attached to the crankcase, and thumb compression and suction were observed on all cylinders when the crankshaft was rotated by hand. The rocker box covers were removed, and no anomalies were noted with the valve springs and rocker arms. Valve train continuity was confirmed when the crankshaft was rotated through 360°. The throttle and mixture control cables remained attached to the controls in the cockpit but were cut to facilitate examination. Fuel was noted throughout the entire fuel system.

MEDICAL AND PATHOLOGICAL INFORMATION

The North Carolina Department of Health and Human Services, Office of the Chief Medical Examiner, Raleigh, North Carolina, performed the autopsy on the pilot. The autopsy report indicated that the pilot's cause of death was multiple blunt force injuries.

The FAA's Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, performed toxicological testing of the pilot. Fluid and tissue specimens from the pilot tested negative for carbon monoxide and ethanol. Desmethyisildenafil, sildenafil, and valsartan were detected in the blood and urine. These medications are non-impairing.

History of Flight

Approach-VFR pattern final	Loss of control in flight (Defining event) Aerodynamic stall/spin
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Pilot Information

Certificate:	Commercial	Age:	80, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Rear
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 With Waivers/Limitations	Last FAA Medical Exam:	10/17/2016
Occupational Pilot:	No	Last Flight Review or Equivalent:	10/15/2016
Flight Time:	1933.2 hours (Total, all aircraft), 96.4 hours (Total, this make and model), 1678.7 hours (Pilot In Command, all aircraft), 2.7 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	JORDAN BRUCE C	Registration:	N30BJ
Model/Series:	PITTS S2E E	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	Yes
Airworthiness Certificate:	Experimental	Serial Number:	BJ-3
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	10/17/2016, Condition	Certified Max Gross Wt.:	
Time Since Last Inspection:	4 Hours	Engines:	1 Reciprocating
Airframe Total Time:	96.4 Hours at time of accident	Engine Manufacturer:	Lycoming
ELT:	C91A installed, not activated	Engine Model/Series:	HIO-360-D1A
Registered Owner:	On file	Rated Power:	190 hp
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	RDU, 416 ft msl	Distance from Accident Site:	9 Nautical Miles
Observation Time:	1537 EST	Direction from Accident Site:	26°
Lowest Cloud Condition:	Few / 25000 ft agl	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	9 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	292°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.18 inches Hg	Temperature/Dew Point:	21° C / -9° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Apex, NC (NC81)	Type of Flight Plan Filed:	None
Destination:	Apex, NC (NC81)	Type of Clearance:	None
Departure Time:	1500 EST	Type of Airspace:	

Airport Information

Airport:	Cox Airport (NC81)	Runway Surface Type:	Grass/turf
Airport Elevation:	455 ft	Runway Surface Condition:	Dry
Runway Used:	09	IFR Approach:	None
Runway Length/Width:	2450 ft / 75 ft	VFR Approach/Landing:	Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	35.752222, -78.864444

Administrative Information

Investigator In Charge (IIC):	Heidi Kemner	Report Date:	04/17/2018
Additional Participating Persons:	Dan Kelly; FAA/FSDO; Greensboro, NC Mike Childers; Lycoming Engines; Atlanta, GA		
Publish Date:	04/17/2018		
Note:	The NTSB traveled to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=94838		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).