



Aviation Investigation Final Report

Location:	Austin, Arkansas	Accident Number:	CEN18FA389
Date & Time:	September 26, 2018, 14:42 Local	Registration:	N534MM
Aircraft:	Vans RV 4	Aircraft Damage:	Substantial
Defining Event:	Aerodynamic stall/spin	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was conducting a local personal flight to fly over his home; it was the pilot's first flight in the airplane without a flight instructor. According to radar data, the airplane started to descend and the ground speed increased from about 100 knots to about 145 knots just before the airplane flew over the pilot's home. according to a witness, the airplane approached the house and the right wing tipped up, the airplane climbed briefly, and then the airplane rolled inverted, descended, and impacted terrain.

Postaccident examination of the airplane and engine revealed no evidence of mechanical malfunctions or anomalies that would have precluded normal operations. The description of the flight sequence is consistent with an accelerated stall when the airplane entered into a left bank as the pilot flew over his home.

The pilot had completed a total of 10 hours of instruction in the accident airplane. According to the pilot's flight instructor, most of the pilot's training time consisted of takeoffs and landings and minimal time was spent training maneuvers and performance characteristics.

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 while maneuvering which resulted in the airplane exceeding its critical angle of attack and an accelerated stall.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Angle of attack - Capability exceeded
Personnel issues	Total experience w/ equipment - Pilot
Environmental issues	Gusts - Effect on equipment

Factual Information

History of Flight

Maneuvering-low-alt flying	Aerodynamic stall/spin (Defining event)
Maneuvering	Loss of control in flight

On September 26, 2018, about 1442 central daylight time, an amateur-built Vans RV-4 airplane, N534MM, was substantially damaged when it was involved in an accident near Austin, Arkansas. The private pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* (CFR) Part 91 personal flight.

Radar data showed that the airplane departed North Little Rock Municipal Airport (ORK), North Little Rock, Arkansas, about 1424 and flew at an altitude between 2,600 ft and 2,700 ft mean sea level (msl) and a ground speed of between 110 and 120 knots until just west of the pilot's home (see figure 1). The airplane started to descend about 1439 and the ground speed increased to about 145 knots. The last radar location was recorded at 1440:41 about over the pilot's home and the accident site was located in an open field a few hundred feet east of the pilot's home.

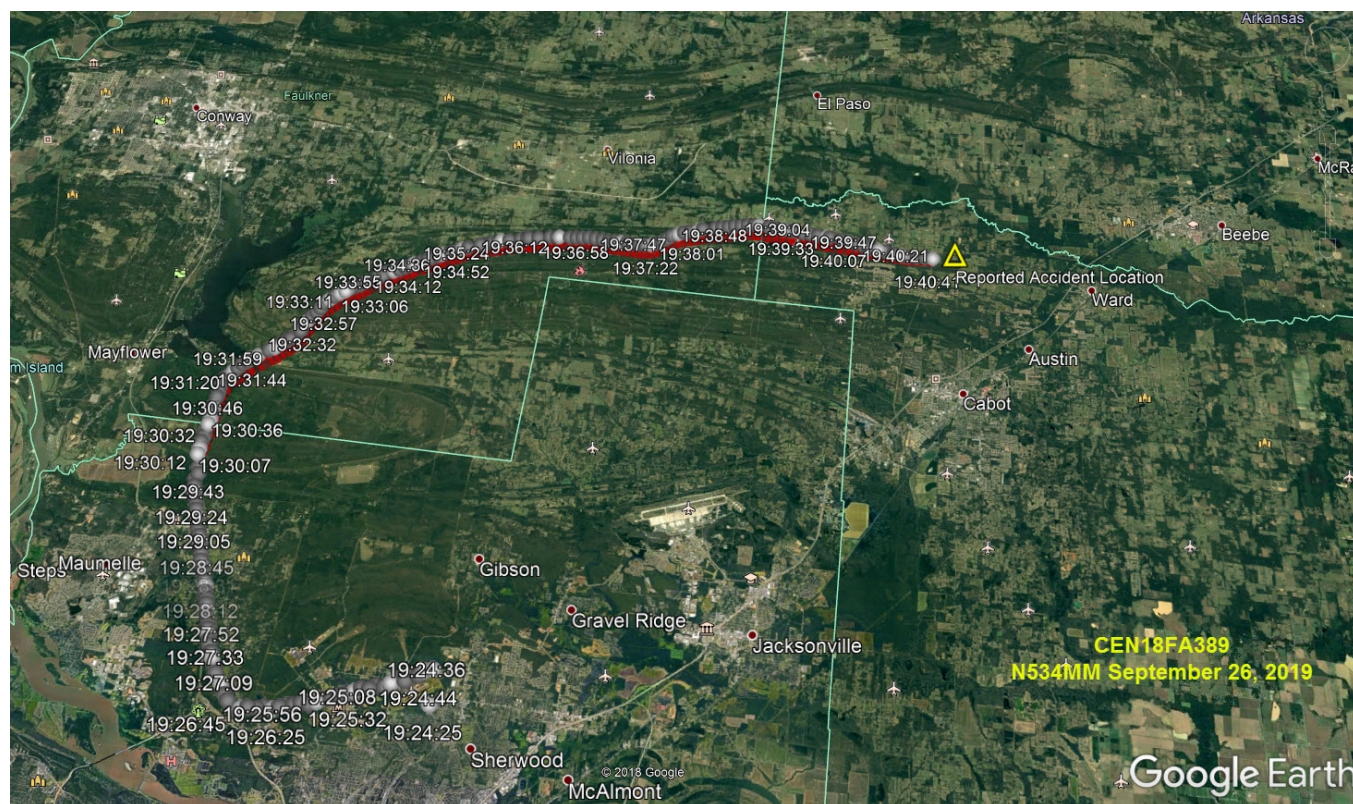


Figure 1 - Radar data of accident flight

In a postaccident interview, the pilot's wife stated that, before the pilot left the house for work, he said the weather was "not good" for flying and he did not plan to fly the airplane that day. Later, he called her from the airport and told her he was going to fly. She asked him if he was "sure about flying due to the weather," and he said the winds had decreased and it looked good for the flight. Then he told her when to stand outside their house to see him fly by.

As the airplane flew overhead, the pilot's wife reported that she saw the right wing "tip up," the airplane climbed briefly, and then, "all of sudden," the airplane went upside down and dove down. She added that the airplane was flying so low and so fast that she knew he was not going to be able to recover.

Pilot Information

Certificate:	Commercial; Private	Age:	45, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	Unknown
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	March 6, 2006
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 5623 hours (Total, all aircraft), 10 hours (Total, this make and model)		

The pilot actively flew Lockheed C-130 military transport airplanes, with the United States Air National Guard (US ANG). According to US ANG records, the pilot had logged a total of 5,613 hours of total time in the C-130.

The pilot had received a tailwheel endorsement on September 21, 2018. According to the pilot's wife, the accident flight was the pilot's first flight in the airplane without a flight instructor. According to the pilot's flight instructor, most of the pilot's training in the airplane consisted of takeoffs and landings and minimal time was spent training maneuvers and performance characteristics.

The pilot's Federal Aviation Administration (FAA) first-class medical certificate was issued on March 6, 2006, with the limitation that he must wear corrective lenses, and it expired on March 31, 2008. The pilot's military medical clearance was active. According to 14 CFR 61.23(b)(9), "Operations not requiring a medical certificate," pilots that have a current military medical clearance with the US armed forces are not required to hold a current medical certificate for domestic flights that require a third-class medical clearance.

Aircraft and Owner/Operator Information

Aircraft Make:	Vans	Registration:	N534MM
Model/Series:	RV 4 Undesignat	Aircraft Category:	Airplane
Year of Manufacture:	1997	Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	MM3756
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	February 8, 2018 Annual	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	Reciprocating
Airframe Total Time:	811.7 Hrs as of last inspection	Engine Manufacturer:	Lycoming
ELT:	C91A installed	Engine Model/Series:	O-360-A1A
Registered Owner:		Rated Power:	180 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

The instrument panel was destroyed by the postimpact fire; as a result, investigators were unable to determine the airplane's total time.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KLRF, 311 ft msl	Distance from Accident Site:	10 Nautical Miles
Observation Time:	14:56 Local	Direction from Accident Site:	221°
Lowest Cloud Condition:		Visibility	10 miles
Lowest Ceiling:	Broken / 4200 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	20°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.09 inches Hg	Temperature/Dew Point:	21°C / 15°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	N Little Rock, AR (KORK)	Type of Flight Plan Filed:	None
Destination:	N Little Rock, AR (KORK)	Type of Clearance:	None
Departure Time:	14:24 Local	Type of Airspace:	Class G

The upper air sounding chart created for the accident site at 1500 indicated a surface wind from about 30°; at 10 knots with the wind remaining northeasterly through 4,000 ft. The wind increased in speed to 15 knots by about 800 ft msl and to 20 knots by about 1,700 ft. Wind decreased to 10 knots at 4,000 ft msl, and about 5,000 ft msl the wind direction shifted to

about 10º. The chart indicated below about 3,000 ft msl the atmosphere was unstable or conditionally unstable.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	35.04,-92.019447(est)

The airplane impacted an open field, vegetated in grass, in a wings-level, nose-low attitude, between 35° and 40° nose down. The main wreckage came to rest about 185 ft south/southeast of the initial impact point oriented on a heading of 323°, on the edge of Rick Lake (see figure 2).



Figure 2: Aerial photograph depicting initial impact point and location of main wreckage

During the on-scene investigation, investigators located fiberglass and metal fragments, the left aileron, and both propeller blades in the debris field between the initial impact point and the main wreckage. The grass between the initial impact point and the main wreckage was discolored, which was consistent with fuel blighting. The main wreckage included the engine, fuselage, empennage, and both wings. A postimpact fire damaged the fuselage, the inboard portion of both wings, and the skin of the empennage. The main landing gear separated partially from the airplane but remained with the wreckage.

The first ground scar was several inches deep, about 6 inches wide, and extended 5 ft to a larger ground scar. The larger ground scar consisted of three distinct sections; a center section, a left section, and a right section. The left section extended about 7 ft to the east and was about 1 ft 6 inches wide at its widest point. The right section extended about 7 ft to the west and was about 2 inches deep and 6 inches wide at its widest point. The center section extended south towards the main wreckage and was 9 ft long, several inches deep, and full of water. A dark substance consistent with oil pooled at the top of the water. Dirt was displaced out of the larger scar towards the main wreckage to the south.

One propeller blade was on the right side of the debris field and was bowed aft and twisted. The second blade was 38 ft from the end of the main scar with the tip buried in the ground. The second blade also exhibited leading-edge scoring at the tip and was otherwise unremarkable. One half of the propeller hub was 70 ft from the second blade while the other half was buried about 1 ft 6 inches deep in the large ground scar.

A line of trees and bushes between the initial impact point and main wreckage exhibited torn and separated bark. Witness marks on the trees and vegetation and discoloring of the leaves were also consistent with fuel blighting.

A postaccident examination of the airframe and engine conducted by the National Transportation Safety Board and parties to the investigation revealed no preimpact anomalies that would have precluded normal operation.

Medical and Pathological Information

The Arkansas State Crime Laboratory, Medical Examiner Division, Little Rock, Arkansas, performed an autopsy of the pilot. The autopsy indicated that the cause of death was multiple injuries.

Toxicological testing of the pilot's specimens performed by the FAA Forensic Sciences Laboratory was negative for carbon monoxide, ethanol, and drugs.

Administrative Information

Investigator In Charge (IIC):	Liedler, Courtney		
Additional Participating Persons:	Bill Aldrich; FAA; Little Rock, AR John Butler; Lycoming Engines; Dallas, TX		
Original Publish Date:	December 3, 2020	Investigation Class:	2
Note:	The NTSB traveled to the scene of this accident.		
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=98358		

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](#).