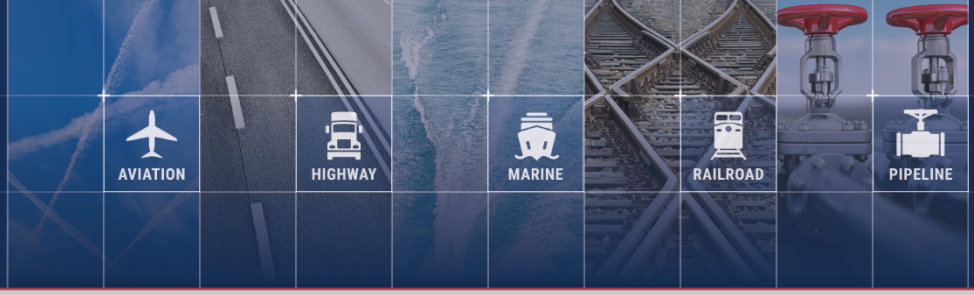

Aviation Investigation Final Report

Location:	Crowell, Texas	**Accident Number:**	CEN22LA163
Date & Time:	March 31, 2022, 09:38 Local	**Registration:**	N789RB
Aircraft:	Kitfox 7	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot of the experimental, amateur-built airplane was performing a slow speed low pass over an unpaved airstrip when he initiated a climb to the left. A witness reported that, when the airplane was about 650 ft above the ground, it “stalled,” the left wing dropped, and the nose went straight down. He additionally reported that the engine was running throughout the flight. The airplane was consumed by a postcrash fire; however, examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

Autopsy of the pilot revealed significant coronary artery disease and a variety of medications that cause significant depression of the central nervous system, including four sedating antihistamines. Some of these medications were found only at very low levels, but the only specimens available were in cavity blood, which may not represent levels in antemortem intravascular blood or be directly related to effects. The reason for the pilot’s concomitant use of antihistamines was unknown, as are the potential effects of using them in combination, including any hangover or withdrawal effects. Therefore, whether effects from the pilot’s use of multiple sedating medications contributed to the circumstances of this accident could not be determined.

Based on the available evidence, it is likely that the pilot exceeded the airplane’s critical angle of attack during low-level flight, which resulted in an aerodynamic stall and loss of control at an altitude too low to allow for recovery.

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 low-level flight, which resulted in an aerodynamic stall and loss of control at an altitude too low to recover.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Airspeed - Not attained/maintained
Aircraft	Angle of attack - Not attained/maintained

Factual Information

History of Flight

Maneuvering-low-alt flying	Loss of control in flight (Defining event)
Maneuvering-low-alt flying	Aerodynamic stall/spin
Uncontrolled descent	Collision with terr/obj (non-CFIT)
Post-impact	Fire/smoke (post-impact)

On March 31, 2022, about 0938 central daylight time, an experimental Kitfox Series 7 airplane, N789RB, was destroyed when it was involved in an accident near Crowell, Texas. The private pilot and the student pilot-rated passenger sustained fatal injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The brother of the pilot, who was also the father of the passenger observed the accident flight. The purpose of the flight was for the pilot to show the passenger the airplane. The airplane departed from a dirt strip at the pilot's residence in Crowell around 0900. The pilot was seated in the left seat and the passenger was seated in the right seat.

The airplane took off and flew over Crowell. The airplane then returned to the dirt strip and flew slow over the strip to the northwest. The airplane climbed out to the left and was about 650 ft off the ground when the airplane "stalled," the left wing dropped, and the nose went straight down. The airplane impacted rolling prairie and was destroyed by a postimpact fire.

The witness reported that the pilot was flying "low and slow," the airplane "stalled," the pilot lost control while in flight, and there was no altitude for recovery. He additionally reported that the engine was working fine during the entire flight and there was nothing mechanically wrong with the engine.

Pilot Information

Certificate:	Private	**Age:**	61,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 None	**Last FAA Medical Exam:**	November 7, 2016
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 500 hours (Total, all aircraft), 100 hours (Total, this make and model)		

Pilot-rated passenger Information

Certificate:	Student	**Age:**	35,Male
Airplane Rating(s):	None	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 None	**Last FAA Medical Exam:**	March 29, 2022
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 1 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Kitfox	**Registration:**	N789RB
Model/Series:	7 Super Sport	**Aircraft Category:**	Airplane
Year of Manufacture:	2020	**Amateur Built:**	Yes
Airworthiness Certificate:	Other	**Serial Number:**	KA08016119
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	1550 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Rotax Aircraft Engines
ELT:	Not installed	**Engine Model/Series:**	912 ULS
Registered Owner:	On file	**Rated Power:**	100 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None
Operator Does Business As:	On file	**Operator Designator Code:**	None

A review of Federal Aviation Administration (FAA) and Transport Canada information found that the experimental airplane was built from a kit by an individual in Canada. The construction of the airplane was completed in May 2020. The accident pilot purchased the airplane in October 2020.

A Transport Canada airworthiness certificate was issued for the airplane in September 2020, as an “amateur-built” airplane. A FAA airworthiness certificate for the airplane was not located.

The airplane’s maintenance records were not available for review.

It was undetermined if the airplane was equipped with a stall warning system or an angle of attack indicator. A historical photograph of the airplane showed that it was equipped with vortex generators on the wings, which lower the stall speed of an airplane.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KF05,1265 ft msl	**Distance from Accident Site:**	27 Nautical Miles
Observation Time:	09:35 Local	**Direction from Accident Site:**	60°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	300°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.93 inches Hg	**Temperature/Dew Point:**	10°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Crowell, TX	**Type of Flight Plan Filed:**	None
Destination:	Crowell, TX	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

At the time of the accident, the witness reported the temperature was about 70°F, the wind was from the northwest, the wind speed was about 8-9 mph with no gusts, and the visibility was clear.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	33.999904,-99.75698(est)

The airplane came to rest upright on private property in a rural area, at 1,528 ft above mean sea level. The airplane was consumed by a postimpact fire. All the major structural components of the airframe were found at the accident site. Flight control continuity was established throughout the airplane. The airframe fuel system and the cockpit area were destroyed by the fire.

Airframe-to-engine control continuity was established. The engine sustained impact and fire damage. The engine case was mostly intact, while most of the engine accessories were damaged from the impact and fire. The composite, three-bladed propeller was thermally damaged and displayed fracture damage consistent with the engine producing power at the time of impact.

Examination of the airframe and engine at the accident site revealed no anomalies that would have precluded normal operation.

Medical and Pathological Information

Pilot

The pilot had reported having had a heart attack, coronary artery stent placement, and bypass surgery to the FAA, as well as the use of pravastatin to lower his cholesterol. According to the autopsy report, the cause of death was blunt force trauma and the manner of death was accident. The pilot was noted to be hypertensive and had moderate to severe atherosclerotic heart disease. No other significant disease was identified.

Toxicology testing performed by the FAA's Forensic Sciences Laboratory identified ethanol at 0.012 gm/dl in cavity blood but none in urine; acetone and N-propanol were also identified in cavity blood but not in urine. Famotidine was detected in both specimens. Gabapentin was

identified at 1872 ng/ml in cavity blood and 107,020 ng/ml in urine; diphenhydramine was not found in cavity blood but was found in urine; cetirizine was found in cavity blood at 31 ng/ml and in urine at 492 ng/ml; hydroxyzine was found at 10 ng/ml in cavity blood and 22 ng/ml in urine; norchlorcylizine was found at 35 ng/ml in cavity blood and detected in urine and finally alpha-hydroxyalprazolam was not detected in cavity blood but was found in urine.

Passenger

The student pilot-rated passenger had reported having no chronic medical conditions and no use of medications to the FAA. According to the autopsy report, the cause of death was blunt force trauma and the manner of death was accident. No significant natural disease was identified. Toxicology testing performed by the FAA's Forensic Sciences Laboratory did not identify any tested-for substances.

Additional Information

FAA Advisory Circular AC 90-109A, Transition to Unfamiliar Aircraft, classified the Kitfox series of airplanes as, "nontraditional and/or unfamiliar airplane systems operation" and stated that this type of airplane has "engine, avionics, fuel systems, etc. that require operational practices that are outside the normal procedures utilized in standard category airplanes." The AC further stated:

Unlike type-certificated airplanes, many experimental airplanes do not have extensive pilot's operating handbooks (POH) or other documentation outlining the unique nature of the systems or controls installed in that particular airplane. This places the burden on the pilot to become familiar with the specific systems and controls in the airplane.

Flying the airplane with a previous operator, a knowledgeable flight instructor, or the original builder, prior to operating the airplane solo will help the pilot understand the reasons why the installed controls are the way they are and what operational characteristics they have. This will also guard against any unusual handling characteristics that may arise from application of a control or system that may catch the pilot off-guard.

The FAA Airplane Flying Handbook, FAA-H-8083-3A, discusses aerodynamic stall awareness. This document states in part:

The key to stall awareness is the pilot's ability to visualize the wing's angle of attack in any particular circumstance, and thereby be able to estimate his/her margin of safety above stall.

This is a learned skill that must be acquired early in flight training and carried through the pilot's entire flying career. The pilot must understand and appreciate factors such as airspeed, pitch attitude, load factor, relative wind, power setting, and airplane configuration in order to develop a reasonably accurate mental picture of the wing's angle of attack at any particular time. It is essential to flight safety that a pilot take into consideration this visualization of the wing's angle of attack prior to entering any flight maneuver.

Administrative Information

Investigator In Charge (IIC):	Hodges, Michael
Additional Participating Persons:	Steven White; FAA Lubbock FSDO; Lubbock, TX Bernhard Kobylik (Accredited Representative); Federal Safety Investigation Authority; Vienna, OF Jordan Paskevich (Technical Advisor); Rotax Aircraft Engines; Vernon, OF Jérôme Ouellet (Accredited Representative); Transportation Safety Board of Canada; Gatineau, OF
Original Publish Date:	August 15, 2023
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=104865