



# Aviation Investigation Final Report

<b>Location:</b>	Maxwell, California	<b>Accident Number:</b>	CEN22FA375
<b>Date &amp; Time:</b>	August 9, 2022, 11:06 Local	<b>Registration:</b>	N51YX
<b>Aircraft:</b>	Sonex Aircraft Waix	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>	Loss of control in flight	<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

The pilot departed in the experimental airplane for a personal flight. A review of the onboard recorded data showed that shortly before the data terminated, the airplane went from a straight and level attitude to a nose-down attitude. A review of the recorded engine parameters did not show any signatures consistent with a loss of engine power. The airplane came to rest nose down, in a flat dirt field. The wreckage, which was destroyed, sustained fire damage.

Postaccident examination did not reveal any preimpact mechanical malfunctions or failures with the airframe and the engine. No fire damage specifically related to an in-flight fire was found in the wreckage.

The pilot purchased the airplane with a partner about 1 year before the accident. According to his logbook, he had flown the airplane 26.2 hours, of which 20.0 hours were with a flight instructor.

Toxicological tests revealed ethanol was detected in lung, liver, kidney, and heart tissue samples along with N-propanol detected in lung tissue, kidney tissue, and heart tissue. Based on the pattern of toxicology results, some or all the ethanol detected in the pilot's postmortem specimens likely was from sources other than ethanol consumption. Given the unclear accident circumstances, there was insufficient evidence to determine whether low-level ethanol effects may have contributed to the accident. The pilot's autopsy was severely limited by the extent of the injuries sustained and therefore reduced the potential for determining if the pilot suffered from impairment or incapacitation due to medical reasons during the flight.

Based on the available evidence, it is likely the airplane departed from controlled flight for unknown reasons, entered a nose-down attitude that was not recovered from, and the airplane impacted terrain. The reason for the loss of control in flight was undetermined.

# Probable Cause and Findings

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

A loss of control in flight for undetermined reasons that resulted in an impact with terrain.

## Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Altitude - Not attained/maintained
Not determined	(general) - Unknown/Not determined

# Factual Information

## History of Flight

Enroute	Unknown or undetermined
Enroute	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)
Post-impact	Fire/smoke (post-impact)

On August 9, 2022, about 1106 Pacific daylight time, a Sonex Aircraft Waix airplane, N51YX, was destroyed when it was involved in an accident near Maxwell, California. The pilot sustained fatal injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the family members of the pilot, the purpose of the flight was personal and the exact route of the flight was unknown.

A review of automatic dependent surveillance – broadcast (ADS-B) data showed that the experimental airplane departed runway 13 at the Colusa County Airport (O08), Colusa, California. The airplane traveled to the north of Colusa and then traveled to the west. The airplane crossed Highway I-5, then traveled to the north of Maxwell, California, where the ADS-B data terminated in a remote area populated with fields used for agricultural work. The airplane came to rest nose down, in a flat dirt field. The wreckage, which was destroyed, sustained fire damage.

The airplane was equipped with a Dynon FlightDEK-D180 unit. The unit recorded about 22 minutes of data that began when the engine was started. A review of the data showed that shortly before the data ended, the airplane went from a straight and level attitude to a nose down attitude. A review of the various experimental engine parameters recorded did not show any signatures consistent with a loss of engine power.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	73, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Unknown
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	Unknown
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	BasicMed With waivers/limitations	<b>Last FAA Medical Exam:</b>	June 29, 2021
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	September 29, 2021
<b>Flight Time:</b>	(Estimated) 1200 hours (Total, all aircraft)		

According to the family members of the pilot, the pilot had been flying airplanes for over 30 years, with various breaks in between. The pilot never reported any concerns with the airplane to family members. He recently reported to family members, that he felt “really comfortable” operating the airplane.

The pilot purchased the airplane with a partner about 1 year before the accident. According to his logbook, he had flown the airplane 26.2 hours, of which 20.0 hours were with a flight instructor.

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Sonex Aircraft	<b>Registration:</b>	N51YX
<b>Model/Series:</b>	Waix Undesignated Series	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	2007	<b>Amateur Built:</b>	Yes
<b>Airworthiness Certificate:</b>	Experimental light sport (Special)	<b>Serial Number:</b>	W0051
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	January 8, 2022 Annual	<b>Certified Max Gross Wt.:</b>	1234 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	571.1 Hrs as of last inspection	<b>Engine Manufacturer:</b>	CAMit
<b>ELT:</b>	Installed	<b>Engine Model/Series:</b>	33SLRE
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	127 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None
<b>Operator Does Business As:</b>	On file	<b>Operator Designator Code:</b>	None

A review of Federal Aviation Administration (FAA) registration records showed that the pilot and another individual had purchased the airplane from the airplane builder in September 2021.

A review of the airplane maintenance records showed that a new CAMit 33SLRE reciprocating engine was installed in the airplane in June 2016.

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KOVE, 187 ft msl	<b>Distance from Accident Site:</b>	29 Nautical Miles
<b>Observation Time:</b>	10:53 Local	<b>Direction from Accident Site:</b>	76°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	8 knots /	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>	150°	<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>	29.95 inches Hg	<b>Temperature/Dew Point:</b>	25°C / 14°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Colusa, CA (008)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>		<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	10:27 Local	<b>Type of Airspace:</b>	Class G

The estimated density altitude for the closest meteorological reporting station was 1,561 ft above mean sea level.

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	On-ground
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	Unknown
<b>Total Injuries:</b>	1 Fatal	<b>Latitude, Longitude:</b>	39.378551,-122.22683(est)

A postaccident examination revealed that flight control continuity was established from the cockpit to the empennage, and from the wings to the cockpit. For the cockpit, the flight controls were destroyed from fire damage. The flight control hardware appeared to be intact. In the cockpit, the control rods were destroyed from the fire damage. The breached fuel tank, along with the fuel lines, were also destroyed by the fire.

The engine, which sustained impact damage, was examined. The crankshaft flange was able to be rotated by hand to confirm internal engine continuity with no issues noted. Rocker arm movement was confirmed on all cylinders for both the intake and exhaust. All pistons moved within the cylinders and each of the accessory gears moved when the propeller remnant was rotated by hand. The sump remains were removed and all internal components were found to be connected and moved when the engine was rotated. The wood propeller was destroyed from the impact sequence.

The examination discovered no preimpact mechanical malfunctions or failures with the airframe or the engine. Additionally, no fire damage specifically related to an in-flight fire was found in the wreckage.

### **Medical and Pathological Information**

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According to the pilot's autopsy report, his cause of death was high-velocity acceleration-deceleration polytrauma and his manner of death was accident. The extent of injuries severely limited evaluation for natural disease, preventing structural evaluation of the brain, heart, and lungs. Examinable trachea and bronchi showed no evidence of smoke inhalation.

Toxicological testing of postmortem specimens from the pilot identified ethanol at 0.16 g/hg in one liver tissue specimen, 0.078 g/hg in another liver tissue specimen, 0.038 g/hg in lung tissue, 0.064 g/hg in kidney tissue, and 0.033 g/hg in heart tissue. N-propanol was detected in lung tissue, kidney tissue, and heart tissue. Ondansetron was detected in liver tissue. No urine, vitreous fluid, or suitable blood was available for testing.

The pilot previously had esophageal cancer that had been successfully treated with surgery in 2013.

### **Additional Information**

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The FAA has published Advisory Circular 90-109A Transition to Unfamiliar Aircraft. This document discusses the classification of the Sonex Aircraft Waix airplane. The Sonex Aircraft

Waix airplane is classified as having light control forces and/or rapid airplane response, along with nontraditional and/or unfamiliar airplane system operations. This document discusses light control forces and rapid airplane response and states in part:

*The hazard of light forces and rapid response is that without some level of training, the pilot may over-control the airplane. This can manifest itself during any phase of flight. The risks can vary from frustration to damage during takeoff and landing, to loss of control up to and including overstressing the airframe and structural failure.*

This document discusses nontraditional and/or unfamiliar airplane system operations and states in part:

*Builders of experimental airplanes are able to customize every aspect of their airplane to their own personal preferences. This extends to the installation of systems not found on standard airplanes in the training and rental fleet, such as the fuel valve location discussed in the example above. Builders also sometimes place familiar instruments and controls in unfamiliar locations on the panel or in the cockpit area. This is true even in seemingly identical examples of a particular design. The ability to completely customize the airplane is one reason builders choose to build their own, rather than purchase a standard airplane. The hazard in operating these airplanes is the potential for misuse or system mismanagement. The risks of this misuse or mismanagement can include an inadvertently induced abnormal or emergency situation.*



## Administrative Information

Investigator In Charge (IIC):	Hodges, Michael
Additional Participating Persons:	Steven Gustison; FAA Sacramento FSDO; Sacramento, CA
Original Publish Date:	March 20, 2024
Last Revision Date:	
Investigation Class:	<a href="#">Class 3</a>
Note:	
Investigation Docket:	<a href="https://data.nts.gov/Docket?ProjectID=105703">https://data.nts.gov/Docket?ProjectID=105703</a>

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](#).