



Aviation Investigation Final Report

Location:	Palm Coast, Florida	Accident Number:	ERA15FA003
Date & Time:	October 3, 2014, 09:35 Local	Registration:	N461MM
Aircraft:	MILLER RAYMOND A SONEX WAIEX	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (total)	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The accident flight was the pilot's first solo flight in the experimental amateur-built airplane, which had not been flown for about 6 months. The airplane departed without incident; however, about 10 minutes after takeoff, it experienced a total loss of engine power (as reported by a witness) and subsequently impacted in a tidal marsh. Postaccident examination of the airplane, which included disassembly of its engine, did not reveal evidence of any preimpact mechanical malfunctions; however, the fuel system was completely compromised and the majority of the ignition system was not recovered. While the airplane had a reported history of fuel system issues, the logbooks were not located, and the airplane's maintenance and operational history could not be verified. Therefore, the reason for the loss of engine power could not be determined.

The pilot had no record of a Federal Aviation Administration medical certification examination. A limited autopsy did not identify any natural disease. Toxicology testing detected ethanol in muscle (0.082 gm/dl) and liver (0.082 gm/dl), as well as n-butanol and n-propanol. While the distribution of ethanol in the muscle and liver is not inconsistent with ingestion, decomposition and the finding of n-butanol and n-propanol in tissues suggests that some or all of the ethanol came from microbial action after death.

Additionally, diphenhydramine and citalopram and its metabolite were detected in liver and muscle. Although diphenhydramine can cause significant psychomotor impairment, no blood was available for analysis, thus it could not be determined if the pilot was impaired by the diphenhydramine at the time of the accident. Citalopram is an antidepressant that is not generally considered impairing; however, it was unknown if the pilot's underlying psychiatric condition was under control.

Probable Cause and Findings

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

A total loss of engine power during cruise flight for reasons that could not be determined due to the postaccident condition of the engine and its associated fuel and ignition systems.

Findings

Not determined

(general) - Unknown/Not determined

Factual Information

History of Flight

Enroute-cruise	Loss of engine power (total) (Defining event)
Landing	Off-field or emergency landing
Landing-landing roll	Collision with terr/obj (non-CFIT)

On October 3, 2014, about 0935 eastern daylight time, an experimental amateur-built Sonex Waix, N461MM, owned and operated by a private individual, was substantially damaged when it impacted terrain about 10 minutes after takeoff from the Flagler County Airport (XFL), Palm Coast, Florida. The private pilot was fatally injured. Visual meteorological conditions prevailed and no flight plan had been filed for the local personal flight that was conducted under the provisions of 14 Code of Federal Regulations Part 91.

The XFL airport manager reported that the airplane had been based at the airport for about 6 months.

According to air traffic control information obtained from the Federal Aviation Administration (FAA), the airplane was cleared for a northeast departure from runway 6, at 0926, which the pilot acknowledged. Approximately 3 minutes later, the pilot was instructed to proceed on course and report clear of the "class delta" airspace. There were no further communications received from the pilot. Primary radar targets consistent with the accident flight revealed that the airplane made a left turn after takeoff and flew northbound, before turning westbound about 0933, where it flew for about 2 minutes, before radar contact was lost. The last two radar targets indicated a northbound turn; however, the accident site was located approximately 1/4 mile west-southwest of the last radar target.

A witness, located in a residential community about 2.5 miles south of the accident site reported that he observed a white/silver single-engine airplane flying overhead sometime between 0900 and 1000. The airplane was approximately 1,000 feet above the ground, and flying to the north when it experienced a sudden, complete loss of engine power. The airplane turned to the left and completed two circular patterns before disappearing from his view. He did not hear any engine noise or sounds associated with an accident, and assumed that the pilot of the airplane performed a successful emergency landing to a nearby former golf course.

According to the pilot's son, when the pilot failed to meet a family member on the evening of October 3rd, local authorities were contacted. The pilot's car was subsequently found in front of his hangar at XFL. The hangar doors were open and the pilot's son believed the pilot most likely elected to make a local solo flight in the airplane, which he had not flown solo previously. Radar data and mobile telephone position information were utilized to help determine the airplane's location. The airplane was subsequently found on October 4th, in a tidal marsh near Pellicer Creek, about 13 miles north-northwest of XFL. It was recovered on October 9th.

Pilot Information

Certificate:	Private	Age:	77, 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:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	None	Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	150 hours (Total, all aircraft), 5 hours (Total, this make and model)		

The pilot, age 77, held a private pilot certificate with a rating for airplane single-engine land that was issued in 1972. The pilot's logbook was not recovered. The pilot reported 150 hours of total flight experience, which included 5 hours in the make and model of the accident airplane on an insurance application dated February 12, 2014.

A search of FAA airman medical records did not reveal any medical certification records for the pilot; however, it was noted that airman medical records with no identified pathology from prior to about 1998 were not uploaded into the current electronic system. The pilot held a Florida driver's license, and did not hold any FAA-issued mechanic or repairman certificates.

Aircraft and Owner/Operator Information

Aircraft Make:	MILLER RAYMOND A	Registration:	N461MM
Model/Series:	SONEX WAIEX NO SERIES	Aircraft Category:	Airplane
Year of Manufacture:	2013	Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	W0156
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	Condition	Certified Max Gross Wt.:	1100 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	5 Hrs at time of accident	Engine Manufacturer:	AeroVee
ELT:		Engine Model/Series:	2180
Registered Owner:	On file	Rated Power:	80 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

According to FAA records, the single-engine, fixed-gear, all-metal, "Y-tail," two-seat monoplane, serial number W0156, was built by the pilot from a kit that was purchased during September 2010, and issued an FAA special airworthiness certificate as an experimental amateur-built airplane on January 15, 2013. The airplane was equipped with an 80-horsepower, AeroVee 2180 engine, with a Sensenich two-blade

wood propeller assembly.

The airplane's maintenance logbooks were not located, and its total hours of operation and progress through phase I flight testing could not be confirmed. The pilot's son indicated that the airplane was likely last flown when it was repositioned from Fort Pierce, Florida, to XFL, about 6 months prior to the accident. According to XFL fueling records, the only fuel purchased by the pilot for the airplane was 5 gallons of 100-low-lead aviation gasoline, on September 11, 2014. Recovery personnel reported that the airplane's 16-gallon fuel tank was half-full of fuel at the time of the recovery.

A friend of the pilot reported that the airplane was originally built and was being maintained by the pilot. He believed that the airplane had been operated for a total of 5 total hours, and that the pilot had flown in it with a flight instructor for less than 3 hours. He further reported that the airplane had been experiencing issues with its fuel system since prior to its departure from Fort Pierce; which included fuel leaks, and required the pilot to perform several adjustments to the fuel metering system.

The engine was not equipped with a traditional carburetor. It utilized an AeroInjector with a "throttle slide" to meter combustion air and fuel, and a tapered needle valve to control in-flight mixture adjustments and serve as an idle cut-off valve.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	XFL,33 ft msl	Distance from Accident Site:	11 Nautical Miles
Observation Time:	09:50 Local	Direction from Accident Site:	345°
Lowest Cloud Condition:		Visibility	7 miles
Lowest Ceiling:	Broken / 5500 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	3 knots /	Turbulence Type Forecast/Actual:	/ None
Wind Direction:	150°	Turbulence Severity Forecast/Actual:	/ N/A
Altimeter Setting:	30.04 inches Hg	Temperature/Dew Point:	26°C / 23°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Palm Coast, FL (XFL)	Type of Flight Plan Filed:	None
Destination:	Palm Coast, FL (XFL)	Type of Clearance:	None
Departure Time:	09:25 Local	Type of Airspace:	Class G

A weather observation taken at XFL, at 0950, reported: wind from 150 degrees at 3 knots, 7 statute miles visibility, a broken cloud ceiling at 5,500 feet, temperature 26 degrees Celsius (C), dew point temperature 23 degrees C, and an altimeter setting of 30.05 inches of mercury.

Airport Information

Airport:	Flagler County Airport XFL	Runway Surface Type:	
Airport Elevation:	33 ft msl	Runway Surface Condition:	Unknown
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	29.653888,-81.272499(est)

The majority of the airplane was buried in mud/water. The empennage and portions of structure associated with both wings were visible to varying degrees depending on the tide. The rudder, both stabilizers and elevators remained attached and were relatively undamaged except for aft compression along the left stabilizer leading edge.

The wreckage was examined by FAA inspectors on October 17, 2014. According to an FAA inspector, the examination revealed that all major portions of the airframe were accounted for. The engine was separated from the airframe, and the cockpit and cabin areas were destroyed. Both wings were crushed aft and bent back to the fuselage. The rudder and elevator control surfaces remained attached to the airframe and connected to the respective control surfaces; however, due to significant impact damage, flight control continuity could not be confirmed.

The propeller was separated from the engine and displayed no evidence consistent with rotation. One blade was fractured near the hub and the other propeller blade remained attached to the hub and was undamaged.

The engine sustained significant impact damage. The front of both valve covers were impact damaged and the exhaust tubes were crushed and bent back. The engine's crankshaft could not be rotated due to impact damage and contamination from mud; however, all cylinder valves were intact and could be manually actuated by depressing their respective springs. In addition, the valve assemblies and cylinders were disassembled for inspection, which revealed no anomalies. The crankshaft was intact. All connecting rods were intact and remained connected with no evidence of abnormal distress. The engine's AeroInjector fuel metering unit was impact damaged. Its fuel line assembly remained intact and the inline throttle valve was in the open position. The fuel mixture position could not be determined. The ignition system data plate was recovered; however, no other components from the ignition system except the spark plugs and portions of the spark plugs ignition leads were recovered. All spark plugs were removed. Their electrodes were undamaged and free of contamination.

Medical and Pathological Information

An autopsy was performed on the pilot by the Office of the District 23 Medical Examiner, St. Augustine, Florida, on October 10, 2014. No natural disease was identified; however, the autopsy was limited due to the condition of the recovered remains. The autopsy report identified the cause of death as multiple blunt force injuries.

Toxicological testing performed on the pilot by the FAA Bioaeronautical Science Research Laboratory, Oklahoma City, Oklahoma, detected ethanol in muscle (0.82 gm/fl) and liver (0.082 gm/dl), as well as n-butanol and n-propanol; however, the samples displayed putrefaction. Additionally, diphenhydramine, citalopram, and its metabolite n-desmethylocitalopram were detected in liver and muscle.

A representative from the pilot's family stated that the pilot lived an active lifestyle and was in good health. He was not aware of any medical conditions that may have contributed to the accident.

Administrative Information

Investigator In Charge (IIC):	Schiada, Luke
Additional Participating Persons:	Marco Grillo; FAA/FSDO; Orlando, FL
Original Publish Date:	October 24, 2016
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=90205

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](#).