



Aviation Investigation Final Report

Location:	Marengo, Illinois	Accident Number:	CEN17FA053
Date & Time:	December 9, 2016, 18:19 Local	Registration:	N4218
Aircraft:	AIRCRAFT MFG & DESIGN LLC CH601XL SLSA	Aircraft Damage:	Destroyed
Defining Event:	Loss of control in flight	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The light sport pilot decided to conduct a night cross-country flight in his light sport airplane even though he was not current to act as pilot-in-command at night. Radar data depicted the airplane departing after sunset and proceeding along the intended route of flight. The last radar contact was at 3,500 ft above mean sea level (msl), about 2,600 ft above ground level, about 0.5 mile from the accident site. There were no witnesses to the accident, and the wreckage was located the following morning in a plowed field along the intended route of flight about 12.6 nautical miles from the departure airport.

The impact damage to the airframe was consistent with the airplane impacting the terrain while inverted. A postaccident examination of the airframe and engine did not reveal any anomalies consistent with a preimpact failure or malfunction.

The pilot's sport pilot certificate did not authorize him to fly at night. In conjunction with his private pilot training, he had an expired 90-day endorsement for night flight that was dated about 14 months before the accident. It is possible that the pilot became spatially disoriented and lost control of the airplane; however, given that the pilot had been flying at night and that there were no mechanical anomalies identified during the investigation, the reason for the loss of control could not be determined.

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 reasons that could not be determined because no anomalies consistent with a preimpact failure or malfunction were identified during the investigation.

Findings

Not determined	(general) - Unknown/Not determined
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Factual Information

History of Flight

Enroute-cruise	Loss of control in flight (Defining event)
Enroute-cruise	Unknown or undetermined

On December 9, 2016, about 1819 central standard time, an Aircraft Manufacturing and Design, LLC, Zodiac CH601XL SLSA, light sport airplane, N4218, impacted terrain following a loss of control in Marengo, Illinois. The sport pilot was fatally injured, and the airplane was destroyed. The airplane was registered to and operated by the pilot under the provisions of Title 14 *Code of Federal Regulations (CFR)* Part 91 as a personal flight. Night visual meteorological conditions prevailed for the flight, which was not operating on a flight plan. The flight originated from the Poplar Grove Airport (C77), Poplar Grove, Illinois, about 1812, with an intended destination of the Schaumburg Regional Airport (06C), Schaumburg, Illinois.

The pilot planned to fly from C7 to 06C, a distance of about 38 nautical miles, to attend an Experimental Aircraft Association (EAA) chapter holiday party. The pilot did not arrive at the party. The wreckage was discovered about 0730 the following morning.

There were no communications between air traffic control and the pilot. The airport surveillance radar (ASR) located at the Rockford International Airport, Rockford, Illinois, showed the airplane departing C77 and proceeding on a course toward 06C. The airplane climbed to an altitude of 3,700 ft above mean sea level (msl). The last radar return showed the airplane at an altitude of 3,500 ft msl about 0.5 miles northwest of the accident site.

The airplane came to rest in a plowed cornfield. The site was 12.6 miles southeast of C77 along the direct route between C77 and 06C.

Pilot Information

Certificate:	Sport Pilot	Age:	63,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	August 27, 2015
Occupational Pilot:	No	Last Flight Review or Equivalent:	October 21, 2016
Flight Time:	274 hours (Total, all aircraft), 274 hours (Total, this make and model), 189 hours (Pilot In Command, all aircraft), 16.8 hours (Last 90 days, all aircraft), 4.6 hours (Last 30 days, all aircraft)		

The pilot held a sport pilot certificate that was issued on November 30, 2012. The pilot's logbook contained entries from July 22, 2008 through November 26, 2016. The pilot had logged total flight time of 274 hours, all of which was in the accident airplane. Of these hours, 189 hours were logged as pilot-in-command and 9.5 hours as night flight time. The pilot's last logged 0.5 hours of night flight on November 14, 2016. The pilot's logbook contained a night flight endorsement dated October 1, 2015. The pilot's last flight review was completed on October 21, 2016.

The pilot had been taking flight instruction toward his private pilot certificate. He had passed the private pilot written knowledge examination on September 15, 2016.

Title 14 *CFR* section 61.315 states that the holder of a sport pilot certificate may not act as pilot in command of a light sport aircraft at night.

Title 14 *CFR* 61.87 (o)(3) states that a student pilot may not operate an aircraft in solo flight at night unless that student pilot has received "an endorsement in the student's logbook for the specific make and model aircraft to be flown by an authorized instructor who gave the training within the 90-day period preceding the date of the flight."

Aircraft and Owner/Operator Information

Aircraft Make:	AIRCRAFT MFG & DESIGN LLC	Registration:	N4218
Model/Series:	CH601XL SLSA	Aircraft Category:	Airplane
Year of Manufacture:	2008	Amateur Built:	
Airworthiness Certificate:	Special light-sport (Special)	Serial Number:	601-068S
Landing Gear Type:	Tricycle	Seats:	2
Date/Type of Last Inspection:	September 2, 2016 Annual	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	263.8 Hrs as of last inspection	Engine Manufacturer:	CONT MOTOR
ELT:	Installed, not activated	Engine Model/Series:	O-200A
Registered Owner:	On file	Rated Power:	100 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

The pilot purchased the light sport airplane from the factory when it was manufactured in 2008. Maintenance logbook records showed that the airplane's wings were modified in June 2010 in accordance with the manufacturer's safety alert dated November 7, 2009.

The maintenance logbooks showed that the last annual inspection was performed on September 2, 2016, at an airplane total time of 263.8 hours. The last entry in the logbook was a battery replacement on November 9, 2016, at an airplane total time of 280.3 hours.

The pilot's wife was the passenger during the last flight logged in the pilot's logbook, which occurred

about 2 weeks before the accident. She stated that she was not aware of any anomalies with the airplane at that time.

The airplane was fueled with 12 gallons of 100LL aviation fuel on December 6, 2016. It is unknown if the airplane was flown between the time it was fueled and the accident flight.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night
Observation Facility, Elevation:	RFD, 742 ft msl	Distance from Accident Site:	24 Nautical Miles
Observation Time:	17:54 Local	Direction from Accident Site:	265°
Lowest Cloud Condition:	Few / 18000 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	4 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	260°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.53 inches Hg	Temperature/Dew Point:	-7°C / -12°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Poplar Grove, IL (C77)	Type of Flight Plan Filed:	None
Destination:	Schaumburg, IL (06C)	Type of Clearance:	None
Departure Time:	18:12 Local	Type of Airspace:	Class G

Official sunset on the night of the accident was at 1622. The moon was 46° above the horizon at the time of the accident.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	42.225555,-88.627502

The airplane came to rest inverted on a magnetic heading of 15°. The wings and tail were folded up and over the cockpit and engine. There was an impact crater under the engine, which was partially buried in the frozen ground. Most of the wreckage was located at the main impact location. The left main landing gear was located about 190 ft southeast of the main wreckage; a piece of the lower right-wing skin was located about 100 ft southeast of the main wreckage; and a leather satchel belonging to the pilot was

located about 500 ft south of the main wreckage.

A postaccident examination was conducted by the National Transportation Safety Board (NTSB) investigator-in-charge, and Federal Aviation Administration (FAA) inspectors, with the assistance of a representative of the engine manufacturer. The examination did not reveal any anomalies consistent with a preimpact failure or malfunction. The observed damage to the airframe was consistent with the airplane impacting the terrain while inverted. A detailed summary of the examination is included in the docket associated with the investigation.

Medical and Pathological Information

An autopsy of the pilot was performed at the McHenry County Coroner's Office, Woodstock, Illinois, on December 12, 2016. The pilot's death was attributed to multiple injuries sustained in the accident.

Toxicology testing performed by the FAA Bioaeronautical Research Sciences Laboratory, Oklahoma City, Oklahoma, was negative for carbon monoxide, cyanide, and ethanol. The testing was negative for drugs in the testing profile except that atorvastatin which was detected in the liver. Atorvastatin, commonly known as Lipitor, is used to treat elevated cholesterol and is generally considered to be non-impairing.

Tests and Research

A Garmin GPSMAP, a Dynon EFIS-D100 electronic flight instrument system and a Dynon EMS-D120 engine monitoring system were recovered from the wreckage and sent to the NTSB Recorders Laboratory, Washington DC, for examination and download.

Both the Garmin GPSMAP and the associated SD card sustained impact damage. The non-volatile memory (NVM) chip that stores track history was cracked. The chip was repaired; however, data could not be retrieved. The SD Card was cracked and the NVM component was missing.

The Dynon EFIS-D100 sustained significant impact damage. The NVM chip was intact. Minor pin damage was repaired, and the chip was successfully downloaded. However, historical data was not found on the chip because either the logging function was turned off or, the firmware version did not support data logging.

The Dynon EMS-D120 sustained significant impact damage. The NVM chip was repaired and about 16 recorded historical sessions were downloaded. There was no recorded geographical data that matched either C77 or the accident site, indicating that data from the accident flight was not recorded.

Administrative Information

Investigator In Charge (IIC):	Sullivan, Pamela
Additional Participating Persons:	Ed Dabrowski; FAA; Des Plaines, IL Bill Borah; FAA; Des Plaines, IL Chris Lang; Continental Motors; Mobile, AL
Original Publish Date:	March 14, 2018
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=94487

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](#).