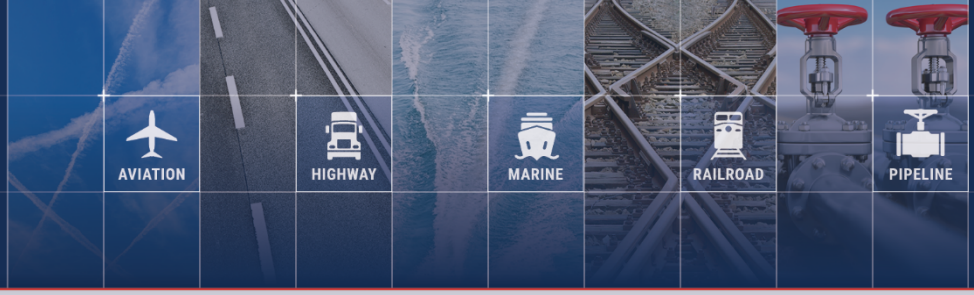

Aviation Investigation Final Report

Location:	Sauk Centre, Minnesota	**Accident Number:**	CEN18FA083
Date & Time:	January 23, 2018, 15:30 Local	**Registration:**	N251WT
Aircraft:	SKWIRA MATTHEW J W-10 TAILWIND	**Aircraft Damage:**	Substantial
Defining Event:	Unknown or undetermined	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot departed on a multi-leg cross-country flight in his experimental amateur-built airplane. The calculated total flight duration was about 2 hours 16 minutes. There were no radio communications from the pilot or radar data associated with the airplane, and there were no witnesses to the accident. The wreckage was located the morning after the accident about 2.7 miles south of the last airport of departure. Friends of the pilot reported that he typically kept the airplane fueled to capacity. The airplane held 32 total gallons of fuel and its estimated fuel consumption was about 10 gallons per hour. The fuel system was compromised by impact damage and the fuel on board at the time of the accident could not be determined; however, if he had departed initially with a full fuel tank, he would have had sufficient fuel for the flight. Examination of the airframe and engine did not reveal any evidence of mechanical anomalies. One of the wooden propeller blades was shattered, indicative of some level of rotation at impact, but a power level could not be determined. Autopsy and toxicology of the pilot revealed no evidence of physiological impairment or incapacitation. Given the lack of information about the final moments of the flight, the reason for the impact with terrain could not be determined.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Impact with terrain for reasons that could not be determined based on the available information.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Unknown	Unknown or undetermined (Defining event)

On January 23, 2018, about 1530 central standard time, an experimental, amateur-built W-10 Tailwind airplane, N251WT, was substantially damaged when it impacted terrain near Sauk Centre Municipal Airport (D39), Sauk Centre, Minnesota. The pilot sustained fatal injuries. The airplane was privately owned and was operated by the pilot as a Title 14 *Code of Federal Regulations* Part 91 personal flight. Visual meteorological conditions prevailed throughout the area and no flight plan was filed for the flight, which originated from Cambridge Municipal Airport (CBG), Cambridge, Minnesota, about 1415.

According to witness statements, fuel records, and the pilot's cell phone records, the pilot fueled the airplane with about 7 gallons of fuel and departed D39 about 1200. The pilot landed at Princeton Municipal Airport (PNM), Princeton, Minnesota, about 1244 and departed about 1324. The pilot then landed at CBG about 1341 before departing about 1415. After landing at D39 about 1515, the pilot brought the airplane to a full stop on runway 32, taxied back to the end of the runway, and subsequently departed.

The approximate total flight time from when the pilot originally departed from D39 at 1200, to the time of the accident, was 2 hours 16 minutes, and the total distance flown was about 155 miles. There were no recorded radio communications from the pilot or radar information associated with the airplane. When the pilot did not return as expected, family members contacted authorities and an ALNOT was issued. The airplane wreckage was located about 0820 the next morning about 2.7 statute miles south of D39. The search was assisted by the Air Force Forensic Cellular Team.

Pilot Information

Certificate:	Private	**Age:**	50,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	BasicMed None	**Last FAA Medical Exam:**	August 28, 2017
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 306 hours (Total, all aircraft), 19 hours (Total, this make and model), 19 hours (Last 90 days, all aircraft), 7 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

The pilot held a private pilot certificate. According to pilot logbook information provided by family members, his total flight experience was about 306 hours. No flight time was logged between July 2012

and September 2017; 24 hours were logged between September 2017 and the accident. The pilot's most recent flight review was completed on September 7, 2017. His first flight in the accident airplane was on October 25, 2017, and he had logged about 18 hours in the airplane before the accident. The pilot did not hold a Federal Aviation Administration (FAA) airman medical certificate but reported that he had completed the requirements for operation under BasicMed on August 28, 2017.

Aircraft and Owner/Operator Information

Aircraft Make:	SKWIRA MATTHEW J	**Registration:**	N251WT
Model/Series:	W-10 TAILWIND NO SERIES	**Aircraft Category:**	Airplane
Year of Manufacture:	2017	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	1
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	September 20, 2017 Condition	**Certified Max Gross Wt.:**	1425 lbs
Time Since Last Inspection:	23 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-320B1A
Registered Owner:	On file	**Rated Power:**	160 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The airplane, a Wittman Tailwind, was constructed of a steel tube fuselage and wooden wing structure covered with fabric. The airplane was built by the pilot and received its special airworthiness certificate from the FAA on September 20, 2017. According to FAA documents, no defects were noted during the initial airworthiness certification/inspection. The airplane was powered by a Lycoming O-320-B1A engine equipped with a wooden propeller. According to the engine manufacturer's operating manual, the engine consumed about 10 gallons of fuel per hour. Friends of the pilot stated that the pilot usually kept his fuel tank topped off. The fuel tank capacity of the airplane was 32 total gallons.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	D39,1242 ft msl	**Distance from Accident Site:**	3 Nautical Miles
Observation Time:	15:35 Local	**Direction from Accident Site:**	360°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	350°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.09 inches Hg	**Temperature/Dew Point:**	-3°C / -9°C
Precipitation and Obscuration:			
Departure Point:	Cambridge, MN (CBG)	**Type of Flight Plan Filed:**	None
Destination:	Sauk Centre, MN (D39)	**Type of Clearance:**	None
Departure Time:	14:15 Local	**Type of Airspace:**	Class E

The reported weather at D39 about the time of the accident included clear skies, 10 miles visibility, and wind from 350° at 3 knots.

Airport Information

Airport:	Sauk Municipal D39	**Runway Surface Type:**	
Airport Elevation:	1242 ft msl	**Runway Surface Condition:**	Dry;Ice
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:**	45.659721,-94.930274

The accident site was located in a large plowed field. The left side of the cabin structure had been moved by first responders. There was no evidence of a postcrash fire and there was no odor of fuel at the site. There was no evidence in the surrounding area of impact with any obstructions prior to ground impact.

Signatures at the site indicated that the airplane impacted the ground in an approximate 45° nose-down, wings-level attitude. The cockpit and front structure of the cabin were mostly destroyed by impact forces. The leading edges of both wings were destroyed. The empennage was bent slightly forward and crumpled along its longitudinal length. The fuel tank and fuel lines were compromised. One propeller blade was visible and was relatively undamaged. The second propeller blade was found shattered underneath the engine. The right elevator was found separated from the elevator control system and moved freely. The left elevator was in the full down position and could not be moved.

The engine crankshaft was rotated by hand and drivetrain continuity was established from the propeller to the gearbox. Thumb compression was established on all cylinders. The spark plugs exhibited normal wear patterns. The left and right magnetos were removed but could not be tested due to impact damage. The oil sump was found broken; the engine exhaust and intake pipes were crushed up and aft. The crankshaft flange was deformed, and the starter ring was broken. The oil cooler was crushed aft. The throttle and mixture cables were broken due to impact damage. The carburetor was impact damaged and could not be tested. The fuel lines were compromised by impact damage. No mechanical anomalies were found during the engine examination.

Access panels and fabric were removed to facilitate a detailed flight control examination. Flight control continuity was established from the cockpit to all control surfaces, except the connection to the right elevator control horn. The control horn was found fractured adjacent to a weld joint. The left elevator was connected and appeared undamaged. Examination of the right elevator tubular frame revealed fractures consistent with overstress. Similar overstress fractures were found on the left elevator tubular frame. The overstress fractures were consistent with impact forces. The right elevator skin adjacent to its attachment hinges showed marks consistent with overtravel. The attachment hinges for the left elevator revealed evidence of overtravel in the downward direction. The overstress fractures and overtravel marks were consistent with impact forces. No other anomalies were found during the airframe examination.

Medical and Pathological Information

The Ramsey County Medical Examiner's Office, St. Paul, Minnesota, performed an autopsy of the pilot. The cause of death was blunt trauma. Toxicology testing performed at the FAA Forensic Sciences Laboratory identified no tested-for drugs, ethanol, or carbon monoxide.

Administrative Information

Investigator In Charge (IIC):	Lemishko, Alexander
Additional Participating Persons:	Allan Thilmany; FAA FSDO; Minneapolis, MN Troy Helgeson; Lycoming; Denver, CO
Original Publish Date:	April 8, 2020
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=96647