



Aviation Investigation Final Report

Location:	JAMESTOWN, North Dakota	Accident Number:	CHI00LA043
Date & Time:	December 12, 1999, 12:30 Local	Registration:	N654
Aircraft:	McCarty WITTMAN W-8 TAILWIND	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The accident airplane was destroyed during an in-flight separation of the right wing and subsequent in-flight collision with terrain. The airplane was constructed by the owner and was certified as an experimental/amateur-built airplane by the Federal Aviation Administration. The inboard 15-inches of the right wing spar was sent to the United States Department of Agriculture (USDA) Forest Product Laboratory, Madison, Wisconsin, for examination. According to an examination report, the accident wing spar was constructed of Sitka Spruce (*Picea sitchensis*). The report stated, 'It appears that the bolt holes that were drilled through the spars to accept the 1/4-inch bolts were not all drilled perpendicular to the spar's outer surfaces.' Examination of the second hole from the inboard end, 'suggests that this particular hole was drilled twice to make the bolt for this connection fit.' The report stated, '...the holes that are on either side of the spar are not evenly spaced. There is also considerable difference in the diameter of the middle two holes relative to the diameter of the outer two holes.'

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the wing spar failure due to its inadequate construction by the owner/builder.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: UNKNOWN

Findings

1. (C) WING, SPAR - FAILURE
2. (C) ACFT/EQUIP, INADEQUATE AIRFRAME - OWNER/BUILDER

Occurrence #2: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: UNKNOWN

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT

On December 12, 1999, at an estimated time of 1230 central standard time, a McCarty Wittman W-8 Tailwind, N654, was destroyed during an in-flight separation of the right wing and subsequent in-flight collision with terrain near Jamestown, North Dakota. Visual meteorological conditions prevailed at the time of the accident. The personal flight was operating under the provisions of 14 CFR Part 91 and was not on a flight plan. The commercial pilot and single passenger were fatally injured. The flight departed a private airstrip near Norcross, Minnesota, at exact time unknown, and was en route to Jamestown Municipal Airport (JMS), Jamestown, North Dakota, at the time of the accident.

At an approximate time of 0830, witnesses reported that the pilot and a single passenger departed JMS to fly to a friend's private airstrip near Norcross, Minnesota. The owner of the private airstrip stated that N654 arrived at his airstrip at an approximate time of 0930. The airstrip owner reported that N654 departed his airstrip at 1130 and that the purpose of the flight was to fly back to JMS. The airstrip owner stated that N654 departed his airstrip, along with another airplane as a flight of two.

According to the pilot of the second airplane, he flew within visual contact of N654 until Lisbon, North Dakota, which was about 49 nautical miles from JMS. When over Lisbon, at approximately 1200, he turned for his destination airport and lost visual contact with N654. The pilot reported that during the duration of the flight, where he had visual contact with N654, he noted no anomalies with the aircraft and that N654 was flying straight-and-level at 2,500 feet mean sea level.

The wife of the pilot of N654 called the pilot of the second airplane at 1730 to report that her husband had not returned to his home. The accident airplane was located at 0915 the following morning, approximately 10 nautical miles east of JMS.

PERSONNEL INFORMATION

The pilot, born July 16, 1950, was the holder of commercial pilot and flight instructor certificates with privileges for single engine land airplanes. The pilot possessed an instrument rating.

Federal Aviation Administration (FAA) records indicate that the pilot's last aviation medical examination was performed on May 14, 1999. The pilot possessed a second-class medical with the limitation that he, "Wear corrective lenses for near and distance vision." The second-class medical was issued under a special issuance because the pilot was diagnosed as Type II

diabetic and was prescribed medication for essential hypertension (benign) and had an unspecified stomach & duodenum disorder. The special issuance of the medical certificate had an associated expiration date of May 31, 2000.

According to FAA records the pilot had logged a total of 2,700 hours of flight time, 20 hours during the last 6 months, at the date of his last medical examination. The pilot's flight instructor certificate was renewed on June 30, 1999.

AIRCRAFT INFORMATION

The aircraft was a McCarty Wittman W-8 Tailwind, N654, serial number 269. The Wittman W-8 Tailwind is a built-by-plans, single strutted high-wing airplane consisting of a fabric covered steel-tube fuselage and a fabric covered wing constructed from wood. The Wittman W-8 Tailwind has a fixed landing gear and can accommodate a pilot and a single passenger in a side-by-side orientation.

The airplane was constructed by the owner and was certified as an experimental/amateur-built airplane by the FAA on July 27, 1995.

According to the aircraft logbooks, the last condition inspection of the airplane was completed September 10, 1999, by the owner/builder, at an airframe total time of 113.25 hours. The airplane had a total airframe time of 118.90 at the time of the accident.

The engine was a Lycoming O-320-A3B, serial number L-2627-27C, and had accumulated 118.90 hours at the time of the accident.

METEOROLOGICAL INFORMATION

A weather observation station, located at the Jamestown Municipal Airport (JMS), 10 nautical miles from the accident site on a 090-degree magnetic heading, reported the weather as:

Observation Time:	1247 cst	Wind:	310-degrees
at 13 knots	Visibility:	15 statute miles	Sky Condition:
	Few clouds at 2,200 feet above ground level	Temperature:	04-
degrees centigrade	Dew Point Temperature:	-01-degrees centigrade	Pressure:
	29.87 inches of mercury		

WRECKAGE AND IMPACT INFORMATION

The airplane came to rest in a plowed agricultural field, approximately 10 nautical miles east of the Jamestown Municipal Airport, Jamestown, North Dakota.

The airplane was destroyed during impact with terrain. The fuselage was found nose down, laying on its right side, with the engine and propeller buried in the terrain. The empennage was

found still attached to the fuselage. The right wing, including the full length of the wing spar, was found approximately 1/3 nautical miles southwest of the main wreckage. The left wing was located approximately 45-feet forward of the main wreckage.

The inboard end of the right wing spar exhibited a lateral axis separation that intersected the four wing attachment bolt locations and continued outboard. The right wing attachment fitting was found attached to the fuselage and had separated from the right wing spar. The inboard 15-inches of the right wing spar was retained for further examination.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot at the North Dakota State Morgue, North Dakota Department of Health, Bismarck, North Dakota, on December 14, 1999.

A Forensic Toxicology Fatal Accident Report was prepared by the FAA Civil Aeromedical Institute, Oklahoma City, Oklahoma. Test results were negative for all tests performed.

TESTS AND RESEARCH

The inboard 15-inches of the right wing spar was sent to the United States Department of Agriculture (USDA) Forest Product Laboratory, Madison, Wisconsin, for examination.

According to an examination report, provided by USDA Forest Product Laboratory, the accident wing spar was constructed of Sitka Spruce (*Picea sitchensis*). The failure surface of the spar was, "...spilt cleanly into two pieces by a force that was perpendicular to the direction of the grain." The report further stated, "It appears that the bolt holes that were drilled through the spars to accept the 1/4-inch bolts were not all drilled perpendicular to the spar's outer surfaces." Examination of the second hole from the inboard end, "suggests that this particular hole was drilled twice to make the bolt for this connection fit." The report stated, "...the holes that are on either side of the spar are not evenly spaced. There is also considerable difference in the diameter of the middle two holes relative to the diameter of the outer two holes."

The full USDA Forest Product Laboratory examination report is attached to this report.

ADDITIONAL INFORMATION

A party to the investigation was the Federal Aviation Administration Flight Standards District Office, Fargo, North Dakota.

Pilot Information

Certificate:	Commercial; Flight instructor	Age:	49, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Unknown
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane single-engine	Toxicology Performed:	Yes
Medical Certification:	Class 2 Valid Medical-w/ waivers/lim	Last FAA Medical Exam:	May 14, 1999
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	
Flight Time:	2700 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	McCarty	Registration:	N654
Model/Series:	WITTMAN W-8 TAILWIND WITTMAN W-	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	269
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	September 10, 1999 Annual	Certified Max Gross Wt.:	1500 lbs
Time Since Last Inspection:	6 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	119 Hrs	Engine Manufacturer:	Lycoming
ELT:	Not installed	Engine Model/Series:	O-320-A3B
Registered Owner:	TIMOTHY GORDON MCCARTY	Rated Power:	160 Horsepower
Operator:		Operating Certificate(s) Held:	None
Operator Does Business As:		Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	JMS ,1498 ft msl	Distance from Accident Site:	10 Nautical Miles
Observation Time:	11:47 Local	Direction from Accident Site:	90°
Lowest Cloud Condition:	Unknown	Visibility	15 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	13 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	310°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	3°C / -1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	NORCROSS , MN (PVT)	Type of Flight Plan Filed:	None
Destination:	(JMS)	Type of Clearance:	None
Departure Time:	11:30 Local	Type of Airspace:	Class G

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	0	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	46.909564,-98.690193(est)

Administrative Information

Investigator In Charge (IIC):	Fox, Andrew
Additional Participating Persons:	DAVID JACOB; FARGO , ND
Original Publish Date:	March 2, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=48517

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