



Aviation Investigation Final Report

Location:	Howell, Michigan	Accident Number:	CEN11FA431
Date & Time:	June 29, 2011, 19:15 Local	Registration:	N8AL
Aircraft:	BOSONETTO THORP T-18	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The purpose of the accident flight was for the pilot to obtain a flight review in the airplane that he owned. A witness reported seeing the airplane at a higher-than-normal glidepath to the runway and traveling at a slow airspeed while in a forward-slip maneuver. (A forward slip is a flight maneuver used to increase the descent rate, while maintaining airplane pitch and airspeed.) The witness stated that, while the airplane was in the forward slip and losing altitude, it suddenly entered a right spin and descended out of his view. Another witness reported seeing the airplane yawing side-to-side as it approached the runway and then hearing the engine increase to full power as the airplane simultaneously pitched up. The airplane then nosed over and descended into his front yard. A postaccident examination of the airplane revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation. The low-altitude stall/spin encountered during final approach was likely not recoverable. Toxicological testing revealed the presence of several medications in both the pilot and flight instructor; however, it is not likely that they resulted in any impairment.

Probable Cause and Findings

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

The pilot's failure to maintain airplane control and airspeed during final approach, which resulted in an aerodynamic stall/spin at a low altitude.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Airspeed - Not attained/maintained

Factual Information

History of Flight

Approach-VFR pattern final	Abrupt maneuver
Approach-VFR pattern final	Loss of control in flight (Defining event)
Approach-VFR pattern final	Aerodynamic stall/spin
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On June 29, 2011, at 1915 eastern daylight time, an experimental amateur-built Bosonetto model Thorp T-18, N8AL, was substantially damaged when it impacted terrain and a house while maneuvering to land at the Livingston County Airport (OZW) near Howell, Michigan. The pilot and flight instructor were fatally injured. The airplane was registered to and operated by the private pilot under the provisions of 14 Code of Federal Regulations Part 91 without a flight plan. Day visual meteorological conditions prevailed for the instructional flight, which originated at an unknown time from Canton-Plymouth-Mettetal Airport (1D2) near Plymouth, Michigan.

The purpose of the accident flight was for the pilot to obtain a flight review. A witness to the accident, who was located in his airplane near the departure end of runway 31, reported seeing the airplane in the traffic pattern for runway 31. He stated that after the airplane had turned onto the final approach it was higher than the normal glide-path to the runway and appeared to be traveling at a slow airspeed while in a forward-slip maneuver. (A forward slip is a flight maneuver used to increase the descent rate, while maintaining airplane pitch and airspeed.) The witness stated that while the airplane was in the forward-slip, losing altitude, it suddenly entered a spin to the right and descended out of his view.

Another witness, who was inside his residence located along the final approach path, reported that he saw the airplane yawing side-to-side as it approached runway 31. He stated that he heard the airplane engine increase to what sounded like full power simultaneously as the airplane pitched-up. The airplane then nosed-over and descended into his front yard before ultimately colliding with the south wall of his residence. The witness reported that the engine continued to operate at full power until the airplane collided with his residence.

Another witness, who was driving westbound on M-59 toward the airport, reported seeing the airplane on final approach to runway 31 when it suddenly rolled to the left and right before it descended behind a nearby treeline and out of his sightline.

PERSONNEL INFORMATION

-- Pilot --

According to Federal Aviation Administration (FAA) records, the pilot, age 43, held a private pilot certificate with a single engine land airplane rating. His last aviation medical examination was

completed on November 7, 2006, when he was issued a third-class medical certificate with no limitations or restrictions. A search of FAA records showed no previous accidents, incidents, or enforcement proceedings.

The most recent pilot logbook entry was dated November 13, 2010. At that time, the pilot had accumulated 166.3 hours total flight time. The logbook indicated that all of his flight experience had been completed in single-engine land airplanes, which included 43.4 hours in the accident airplane. The first flight in the accident airplane was dated February 8, 2009. The logbook indicated that he had flown 13.2 hours during the past year; none of that time was during the previous 6 months. However, the accident airplane's hour meter suggested that the pilot could have flown as many as 6.6 hours in the accident airplane during the 6 month period preceding the accident. The pilot's previous flight review was completed on April 5, 2009, in a Cessna model 152 airplane. The pilot's flight logbook included an endorsement to operate tailwheel equipped airplanes, which was dated February 17, 2007.

-- Flight Instructor --

According to FAA records, the flight instructor, age 70, held a commercial pilot certificate with single engine land airplane and instrument airplane ratings. He also held a flight instructor certificate with single engine airplane and instrument airplane ratings. His last aviation medical examination was completed on December 24, 2010, when he was issued a third-class medical certificate with a limitation that he wear lenses for distance vision and possess glasses for near vision. A search of FAA records showed no previous accidents, incidents, or enforcement proceedings.

The most recent pilot logbook entry was dated July 1, 2010, when the flight instructor completed a flight review in a Piper model PA-28R airplane. The logbook did not include any forwarded flight times, and as such, an accurate flight history could not be determined with the information collected during the investigation. According to FAA records, on December 13, 2006, the flight instructor reported having accumulated 4,750 total flight hours on his application for a medical certificate. He did not report his flight experience on subsequent medical applications. The flight instructor kept a provisional record of his completed flights in his personally owned Piper model PA-28R airplane. According to this airplane flight log, his last recorded flight was completed on June 27, 2011. He had flown the Piper model PA-28R airplane 100 hours during the past year, 45 hours during the prior 6 months, 19 hours during previous 90 days, and 4 hours during the preceding 30 days. The flight instructor reportedly had not flown with the pilot or in the accident airplane before the accident flight.

AIRCRAFT INFORMATION

The accident airplane was a 1982 Bosonetto model Thorp T-18 amateur-built airplane, serial number (s/n) 238. A 150-horsepower Lycoming model O-320-A1A reciprocating engine, s/n L-2285-27, powered the airplane. The airplane was equipped with a fixed-pitch, two blade, Sensenich model W66LM74 wood propeller. The tail wheel-equipped airplane had a maximum takeoff weight of 1,600 pounds.

The accident airplane was issued an experimental airworthiness certificate on November 10, 1982. The airplane was reissued an airworthiness certificate on July 9, 1987, after it was modified with a new engine and propeller combination. The airplane hour meter indicated 268.7 hours at the accident site. The airframe had accumulated a total service time of 577.1 hours at the time of the accident. The engine had accumulated 127.9 hours since a field overhaul on July 9, 1987. The last condition inspection was

completed on June 1, 2011, at 571.5 total airframe hours. A postaccident review of the maintenance records found no history of unresolved airworthiness issues.

METEOROLOGICAL INFORMATION

At 1914, the OZW automated surface observing system (ASOS) reported: wind from 300 degrees at 7 knots, visibility 10 miles, clear sky, temperature 25 degrees Celsius, dew point 8 degrees Celsius, and an altimeter setting of 30.06 inches of mercury.

AERODROME INFORMATION

The Livingston County Airport (OZW) was located about 3 miles northwest of Howell, Michigan, was served by a single runway: 13/31 (5,002 feet by 100 feet, concrete). The airport elevation was 962 feet mean sea level (msl). The elevation of the runway 31 threshold was 943 feet msl. A four-light precision approach path indicator (PAPI) was installed for runway 33.

WRECKAGE AND IMPACT INFORMATION

A postaccident investigation confirmed that all airframe structural and flight control components were located at the accident site. The main wreckage was located about 0.34 miles southeast of the runway 31 threshold and was facing a north-northwest heading. A ground depression consistent with an initial impact of the aft fuselage was located about 40 feet south-southeast of the main wreckage in a residential front yard. The ground depression continued on a north-northwest heading to where the airplane had impacted a brick wall of a residence.

The main wreckage consisted of the entire airframe, flight controls, and engine. A fractured propeller blade was found underneath the aft fuselage. There were additional propeller blade fragments located along the wreckage debris path and in the back yard of the residence. All observed structural component failures were consistent with overstress separation. Flight control continuity was established between the individual flight control surfaces and their respective cockpit controls. The flap position could not be determined due to impact damage. The throttle and mixture controls were found in the full forward position. The carburetor heat control was found partially engaged. The magneto switch was found in the LEFT position. The fuel tank, located in the forward fuselage behind the instrument panel, was breached consistent with impact damage and contained residual fuel.

The engine remained attached to the firewall. Internal engine and valve train continuity was confirmed as the engine crankshaft was rotated. Compression and suction were noted on all cylinders in conjunction with crankshaft rotation. The upper spark plugs were removed and exhibited features consistent with normal engine operation. Both magnetos provided spark on all leads when rotated. There were no obstructions between the air filter housing and the carburetor inlet. The fuel supply line to the carburetor and the carburetor bowl both contained fuel. A fuel sample was free of any water or particulate contamination. The carburetor inlet screen was free of any particulate contamination. Mechanical continuity was confirmed from the engine components to their respective cockpit engine controls.

The postaccident examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

MEDICAL AND PATHOLOGICAL INFORMATION

On June 30, 2011, autopsies were performed on the pilot and flight instructor at Sparrow Forensic Pathology Services located in Lansing, Michigan. The cause of death for the pilot and flight instructor was attributed to multiple injuries sustained during the accident.

The FAA's Civil Aerospace Medical Institute (CAMI) in Oklahoma City, Oklahoma, performed toxicology tests on samples obtained during the pilot's autopsy. No carbon monoxide, cyanide, or ethanol was detected. Amlodipine was detected in urine and blood samples. Amlodipine is a long-acting calcium channel blocker used to lower blood pressure and to treat anginal chest pain.

CAMI performed tests on samples obtained during the flight instructor's autopsy. No carbon monoxide or ethanol was detected. 0.6 ug/ml of cyanide was detected in blood samples. Alfuzosin was detected in blood and urine samples. Azacyclonol was detected in urine samples but not in blood samples. Dextromethorphan and dextrorphan were detected in urine and blood samples. Fexofenadine was detected in urine and blood samples. Naproxen was detected in urine samples. Rosuvastatin was detected in urine samples but not in blood samples.

Alfuzosin, brand name Uroxatral, is a medication for benign prostatic hypertrophy and has minimal cardiovascular effects. Dextromethorphan, sold under multiple brand names, is a cough medication and is metabolized into dextrorphan. Fexofenadine, brand name Allegra, is a non-sedating antihistamine and is metabolized into azacyclonol. Naproxen, brand name Alleve, is a non-sedating analgesic. Rosuvastatin, brand name Crestor, is a medication to treat high cholesterol and prevent heart disease.

SURVIVAL ASPECTS

According to first responders, upon their arrival at the accident site, the pilot was not wearing his lap-belt or shoulder harness. The flight instructor was wearing both his lap-belt and shoulder harness.

Pilot Information

Certificate:	Private	Age:	43
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	None
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 Without waivers/limitations	Last FAA Medical Exam:	November 7, 2006
Occupational Pilot:	No	Last Flight Review or Equivalent:	April 5, 2009
Flight Time:	166 hours (Total, all aircraft), 43 hours (Total, this make and model)		

Flight instructor Information

Certificate:	Commercial; Flight instructor	Age:	70
Airplane Rating(s):	Single-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	Toxicology Performed:	Yes
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	December 24, 2010
Occupational Pilot:	No	Last Flight Review or Equivalent:	July 1, 2010
Flight Time:	(Estimated) 4750 hours (Total, all aircraft), 0 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	BOSONETTO	Registration:	N8AL
Model/Series:	THORP T-18	Aircraft Category:	Airplane
Year of Manufacture:	1982	Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	238
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	June 1, 2011 Condition	Certified Max Gross Wt.:	1600 lbs
Time Since Last Inspection:	6 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	577 Hrs at time of accident	Engine Manufacturer:	Lycoming
ELT:	C91A installed, activated, did not aid in locating accident	Engine Model/Series:	O-320-A1A
Registered Owner:	On file	Rated Power:	150 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	OZW,962 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	19:14 Local	Direction from Accident Site:	290°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	7 knots /	Turbulence Type Forecast/Actual:	/ None
Wind Direction:	300°	Turbulence Severity Forecast/Actual:	/ N/A
Altimeter Setting:	30.05 inches Hg	Temperature/Dew Point:	25°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Plymouth, MI (1D2)	Type of Flight Plan Filed:	None
Destination:	Howell, MI (OZW)	Type of Clearance:	None
Departure Time:		Type of Airspace:	Class G

Airport Information

Airport:	Livingston County Airport OZW	Runway Surface Type:	Concrete
Airport Elevation:	962 ft msl	Runway Surface Condition:	Dry
Runway Used:	31	IFR Approach:	None
Runway Length/Width:	5002 ft / 100 ft	VFR Approach/Landing:	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	42.623611,-83.968612

Administrative Information

Investigator In Charge (IIC):	Fox, Andrew
Additional Participating Persons:	Richard D Anderson, Jr.; Federal Aviation Administration East Michigan FSDO; Belleville, MI
Original Publish Date:	May 14, 2014
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=80942

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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](#).