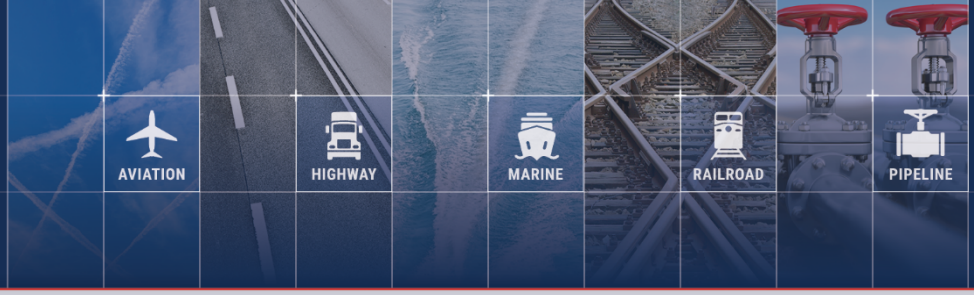

Aviation Investigation Final Report

Location:	Madison, Wisconsin	**Accident Number:**	CEN12LA153
Date & Time:	February 10, 2012, 08:29 Local	**Registration:**	N850LM
Aircraft:	Socata TBM 700	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	3 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that moderate rime ice had accumulated on the airplane during the inbound flight to the fixed-base operator (FBO). FBO employees reported seeing 1 1/2- to 2-inch thick ice on the wings' unprotected surfaces, the left wing's radome, and the propeller spinner and around the stall indicator when the airplane arrived. The pilot removed some of the ice with his hand and declined an offer to have the airplane deiced or put it in a heated hangar. Subsequently, the airplane was parked outside at the FBO for about 1 hour, during which time it was snowing and sleeting. Witnesses reported that they did not see the pilot check the tail surfaces for ice and that, when the airplane taxied for takeoff, they saw ice on portions of the airplane, including the radome, and snow on the wings' surfaces. The pilot reported that, during takeoff, the left wing dropped and was not generating lift, likely due to the ice on the airplane's surface. The airplane veered left, impacted terrain, and then caught on fire before coming to rest. A postaccident examination of the airplane did not reveal any failure that would have resulted in the loss of control.

Probable Cause and Findings

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

The pilot's failure to ensure that ice and snow were removed from the airplane's surfaces during the preflight inspection, which resulted in an inadvertent aerodynamic stall after takeoff and loss of control of the airplane.

Findings

Aircraft	(general) - Not specified
Personnel issues	Preflight inspection - Pilot
Personnel issues	Aircraft control - Pilot
Aircraft	Airspeed - Not attained/maintained

Factual Information

History of Flight

Takeoff	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On February 10, 2012, at 0829 central standard time, a Socata TBM 700 airplane, N850LM, collided with the terrain following a loss of control on takeoff at the Dane County Regional Airport (MSN), Madison, Wisconsin. The pilot and two passengers received minor injuries. The airplane received substantial damage to both wings and the fuselage. The airplane was registered to Precision Aviation LLC and was operated by a private pilot as a 14 Code of Federal Regulations Part 91 personal flight. Visual meteorological conditions prevailed and in instrument flight rules flight plan was filed. The flight was originating at the time of the accident with an intended destination of Fort Myers, Florida.

The pilot had flown from Appleton, Wisconsin to MSN and was on the ground at MSN for approximately one hour prior to the accident departure. During the inbound flight from Appleton, the pilot reported to air traffic control that the airplane picked up moderate rime ice between 3,000 feet and 10,000 feet and that the ice was coming off the airplane as it descended. The pilot stated he did not have any problem controlling the airplane and after landing, he "manually" removed the ice that remained on the airplane, ate breakfast, had the airplane fueled, and walked around the airplane to "…confirm no ice remained on wing and other surfaces."

The pilot reported he began the takeoff rotation at 85 knots and once airborne, the left wing began to drop with no lift being generated from the left wing. The pilot stated he lowered the nose of the airplane and applied right rudder in an attempt to land the airplane back on the runway. The airplane veered to the left and impacted the terrain near the intersection of runway 32/14 and taxiway B. The airplane then slid about 900 feet through the intersection and came to rest in the grass north of taxiway C, at which time the pilot and passengers noticed the airplane was on fire. They were unable to open the main cabin door, so they exited through the emergency door.

The outboard section of the left wing sustained impact and fire damage. Scorch marks were visible on the pavement and grass along the wreckage path. The entire left side of the airplane was covered with soot from the postimpact fire. The right side of the airplane was relatively soot free and the outboard section of the right wing was bent upward. The propeller and engine cowling were separated from the airplane. A postaccident examination of the wreckage was conducted by the Federal Aviation Administration. Flight control continuity was established during the examination and no failure or malfunction of the airplane was identified that would have resulted in the loss of control.

Three employees of the fixed base operator (FBO) at MSN reported seeing ice that was 1½ to 2 inches thick on the unprotected surfaces of the wings, the radome on the left wing, around the stall indicator, and on the propeller spinner when the airplane arrived. They reported seeing the pilot breaking the ice off of portions of the airplane with his hands. None of the FBO personnel saw the pilot check the tail

surfaces. The pilot was offered deicing services and a heated hangar in which to put the airplane, but he declined both. Two of the employees reported hearing one of the passengers voice concern to the pilot about the ice on the airplane, but the pilot did not seem to be concerned. The person who fueled the airplane stated it was snowing and sleeting when he fueled the airplane. FBO personnel reported there was ice on portions of the airplane, including the radome, and snow had accumulated on the wing surfaces when the airplane taxied for takeoff.

At 0832, the MSN Automated Surface Observing System recorded weather conditions as: Wind calm; 2 miles visibility with light snow and mist; scattered clouds at 1,200 feet, overcast clouds at 1,900 feet; temperature 0 degrees Celsius; dew point minus 2 degrees Celsius; altimeter 29.90 inches of mercury.

The airplane was equipped with a Garmin G1000 Integrated Flight Deck. The data on the SD card from the multi-function display (MFD) was downloaded by the National Transportation Safety Board's Vehicle Recorder Division. The last seven seconds of data showed that the indicated airspeed increased from 87.63 knots to 95.82 knots. The pitch attitude increased from 1.49 degrees to 15.88 degrees nose up; then decreased to 11.47 degrees nose up, and then decreased further to 11.21 degrees nose down. The left bank angle during the last 7 seconds increased from 1.15 degrees to 60.59 degrees.

Pilot Information

Certificate:	Private	**Age:**	54
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	August 2, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	November 20, 2011
Flight Time:	1364 hours (Total, all aircraft), 54 hours (Total, this make and model), 1268 hours (Pilot In Command, all aircraft), 54 hours (Last 90 days, all aircraft), 25 hours (Last 30 days, all aircraft), 0.8 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Socata	**Registration:**	N850LM
Model/Series:	TBM 700	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	538
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	October 11, 2011 Annual	**Certified Max Gross Wt.:**	7427 lbs
Time Since Last Inspection:	45.7 Hrs	**Engines:**	1 Turbo prop
Airframe Total Time:	423.4 Hrs at time of accident	**Engine Manufacturer:**	P&W
ELT:	Installed	**Engine Model/Series:**	PT6A66D
Registered Owner:	On file	**Rated Power:**	850 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:	MSN,887 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	08:32 Local	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Scattered / 1200 ft AGL	**Visibility**	2 miles
Lowest Ceiling:	Overcast / 1900 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	0 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.89 inches Hg	**Temperature/Dew Point:**	0°C / -2°C
Precipitation and Obscuration:	Moderate - None - Mist		
Departure Point:	Madison, WI (MSN)	**Type of Flight Plan Filed:**	IFR
Destination:	Fort Myers, FL (FMY)	**Type of Clearance:**	IFR
Departure Time:	08:28 Local	**Type of Airspace:**	Class C

Airport Information

Airport:	Dane County Regional MSN	**Runway Surface Type:**	Asphalt
Airport Elevation:	0 ft msl	**Runway Surface Condition:**	
Runway Used:	21	**IFR Approach:**	None
Runway Length/Width:	7200 ft / 150 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 Minor	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Minor	**Latitude, Longitude:**	43.141109,-89.334167

Administrative Information

Investigator In Charge (IIC):	Sullivan, Pamela
Additional Participating Persons:	
Original Publish Date:	June 11, 2014
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=82860