Aviation Investigation Final Report

Location:	Benezette, Pennsylvania	**Accident Number:**	ERA11FA299
Date & Time:	May 13, 2011, 18:05 Local	**Registration:**	N7603D
Aircraft:	Piper PA-22-150	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

According to several witnesses, the airplane was in cruise flight at "high" altitude when the wings rocked and the airplane entered an uncontrolled descent. The airplane "spun a long time" and the engine sound was described as surging during the descent. The pilot regained airplane control, leveled briefly, the sound of the engine became smooth and continuous, and the airplane climbed. Soon after, the wings rocked again; the airplane departed controlled flight, descended behind trees and terrain, and the sounds of impact were heard. A review of the pilot's records and employment history revealed demonstrated abilities in many different types of airplanes, in all types of environments and weather conditions. An examination of the maintenance records and the wreckage revealed a properly restored and maintained airplane, with no preimpact mechanical malfunctions or failures noted that would have precluded normal operation. Interviews and the pilot's medical records revealed he had a history of diabetes, and diabetes-related health issues that included neuropathy (numbness) of the feet. Review of the pilot's medical records revealed that his diabetes was controlled by medication and diet and that he was eligible for a Federal Aviation Administration medical certificate. A review of the autopsy and toxicology reports revealed no obvious medical event suffered by the pilot before the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's loss of airplane control for reasons that could not be determined from the available evidence.

Findings

Not determined	(general) - Unknown/Not determined
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Unknown	Unknown or undetermined
Enroute	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On May 13, 2011, at 1805 eastern daylight time, a Piper PA-22-150, N7603D, was substantially damaged following an uncontrolled descent and collision with terrain after it departed cruise flight near Benezette, Pennsylvania. The certificated airline transport pilot/owner was fatally injured. Visual meteorological conditions prevailed, and no flight plan was filed for the personal flight, which was conducted under the provisions of Title 14 Code of Federal Regulations Part 91. The pilot departed Burke Lakefront Airport (BKL), Cleveland, Ohio, around 1430, with the ultimate intended destination of Skylark Airpark (7B6), Warehouse Point, Connecticut. The pilot's intermediate planned fuel stop could not be determined.

According to several witnesses, the airplane was in cruise flight, at a "high" altitude, in a level attitude. The engine sound was smooth and continuous without interruption. Then, the wings rocked and the airplane entered an uncontrolled descent. The airplane "spun a long time" and the engine sound was described as surging during the descent. The airplane leveled briefly, the sound of the engine became smooth and continuous, and the airplane began to climb. Soon after, the wings rocked again; the airplane departed controlled flight, descended behind trees and terrain, and the sounds of impact were heard.

A Safety Board air traffic control specialist identified the radar track associated with the accident airplane. At 1802:45, the airplane was in cruise flight at 5,700 feet above mean sea level (msl) in the vicinity of the accident location. At 1802:57, just 12 seconds later, the next radar target was depicted at 4,900 feet msl. The final radar target was identified at 1803:09, with no altitude encoding information depicted.

PERSONNEL INFORMATION

According to Federal Aviation Administration (FAA) records, the pilot, age 50, held an airline transport pilot certificate for airplane multiengine land, airplane single-engine land, airplane single-engine sea, and rotorcraft-helicopter. He also held a commercial pilot certificate for gliders. In addition, he held a flight instructor certificate for airplane single and multiengine, glider, rotorcraft-helicopter, and instrument airplane and helicopter. His most recent first-class medical certificate was issued on March 24, 2011, with the limitations of "must wear corrective lenses and possess glasses for near and interim vision" and "not valid for any class after." He

reported 6,650 total hours of flight experience on that date.

A review of the pilot's professional history and interviews with family members and former colleagues revealed that he served as a military pilot, an FAA operations inspector, and as a demonstration pilot for an aircraft manufacturer.

AIRCRAFT INFORMATION

According to FAA records, an airworthiness certificate was issued for the airplane in 1957. It was a four-seat, high-wing, fixed conventional gear airplane that was equipped with a Lycoming O-320 series, 180 horsepower, engine installed under a Supplemental Type Certificate. Numerous other modifications were made to the airplane during the restoration by using FAA Form 337s as well as existing STCs for the airplane. The most recent annual inspection was completed November 26, 2010, at 2,679 total aircraft hours. At the time of the accident the airplane accumulated approximately 2,724.6 total flight hours.

A review of maintenance records and a photo-journal revealed that the pilot/owner and a certificated airframe and powerplant mechanic completed a complete restoration of the airplane. The records and the photo-journal documented the entire process with significant modern upgrades throughout.

METEOROLOGICAL INFORMATION

At 1805, the weather reported at Saint Mary's Municipal Airport (OYM), Saint Mary's, Pennsylvania, about 7 miles to the west of the accident site, included winds from 180 degrees at 7 knots gusting to 16 knots, winds 150 degrees variable 210 degrees, visibility 10 miles, sky clear below 12,000 feet, temperature 23 degrees C, dew point 15 degrees C, altimeter 29.76 inches of Hg. Remarks; automated observation system, lightning distant west through north, density altitude 3,600 feet.

WRECKAGE AND IMPACT INFORMATION

The airplane was examined at the accident site on May 14, 2011, and all major components were accounted for at the scene. The airplane came to rest at the bottom of a steep hill at the edge of a line of trees. Several tree limbs directly above the wreckage were broken. The tree scars, ground scars, and overall impact damage were consistent with a vertical descent. The right wing tip rested around a tree and damage was observed on the face of the tree and to a few of the lower branches.

Control continuity was verified from the ailerons to the control wheel in the cockpit. All fractured control cables exhibited overload failures. The flaps were found in the retracted position. Both fuel caps were dislodged from their seats but found at the accident site.

The leading edges of both wings were crushed aft in compression, and both fuel tanks were

compromised. The leading edge of the left wing was wrinkled and impact damaged. The left wing strut remained attached to the fuselage and was deformed. There was a trace amount of fuel in the left wing that drained when it was separated by emergency crews. The underside of the left wing exhibited fuel staining.

The right wing came to rest next to a tree and remained attached to the fuselage. Damage was observed on the face of the tree and to a few of the lower branches. The outboard section, measuring approximately two feet, was partially separated and came to rest on either side of the tree. The wing skin was wrinkled and severely impact damaged. Fuel was discovered in the right wing fuel tank and evidence of fuel staining was found on the underside of the wing.

The forward section of the fuselage was buried approximately 18 inches in the ground and impact damaged in the aft direction. The engine was impact damaged and displaced aft into the instrument panel.

The empennage was damaged in compression, and twisted to the left of centerline.
The left horizontal stabilizer was impact damaged and deformed in the direction of the fuselage. The left elevator was crushed inboard and the skin was wrinkled and torn. The right horizontal stabilizer and elevator remained attached to the empennage and were undamaged. The base of the vertical stabilizer was impact damaged and the skin was wrinkled. The rudder was slightly wrinkled. A branch that measured approximately one inch in diameter was found lodged between the top of the vertical stabilizer and rudder. Control continuity was established from the rudder to the rudder bar located beneath the cabin. Control continuity was established from the elevator to the T bar.

The main landing gear remained attached to the fuselage and bent in an upward and aft direction. The tail wheel remained attached to the empennage and was undamaged.
The throttle control handle was separated from the instrument panel. The mixture control was in the approximate full forward position. The left control yoke was impact damaged. Emergency personnel cut the left front seat lap belt but it remained latched and attached at both attachment points. The left front seat shoulder harness was cut in the back, but not latched to the lap buckle.

The engine came to rest on its left side and partially buried. The induction and exhaust piping was partially crushed. The carburetor was fractured across the throttle bore and partially separated from the engine. The engine was recovered from the site and suspended from a lift and partially disassembled to facilitate the examination. Then engine was rotated by hand at the crankshaft flange, compression and suction were observed from all four cylinders, and continuity of the crankshaft to the rear gears and valve train was confirmed. The engine cylinders were examined by a lighted borescope with no anomalies noted.

The carburetor was disassembled and a few drops of water were found in the carburetor bowl and in the mixture control valve well. The carburetor bowl gasket did not exhibit fuel staining. Throttle and mixture controls remained attached. The carburetor fuel inlet screen was

removed and no contaminates were noted. The brass carburetor floats exhibited hydraulic crushing.

The left magneto remained attached to the engine and appeared undamaged. The right magneto was separated from the engine and its mounting flange was fractured. Both magnetos were rotated by hand and produced spark from all ignition towers. The spark plugs exhibited dark gray coloring and normal wear. The No. 2 bottom spark plug was fractured and the No. 4 spark plug was oily. The ignition harness was impact damaged. The starter remained attached to engine and the starter nose case was impact fractured. The alternator remained attached to the engine and exhibited impact damage. The vacuum pump remained attached to engine and exhibited impact damage to the outside of the pump body. It could not be rotated by hand and when disassembled the carbon rotor was fractured and all carbon vanes were intact and the drive coupling was intact. The oil suction screen was removed and no contaminates were noted. The oil filer was examined and no debris was noted between the folds of the filter medium. The oil cooler remained attached to the rear baffle and exhibited impact damage. A small amount of oil was found in the engine sump and the forward portion of the oil sump was fractured.

The field examination of the airframe and powerplant revealed no evidence of pre-impact anomalies.

Several electronic instruments were retained for further examination.

MEDICAL AND PATHOLOGICAL INFORMATION

The Office of the County Coroner for Erie, Pennsylvania, performed the autopsy on the pilot. The cause of death was attributed to multiple blunt force injuries.

Toxicological testing for the pilot was performed by the FAA's Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma. The toxicology report stated no ethanol was detected in the liver or the muscle, but glipizide was detected in the liver and blood.

According to the U.S. National Health Library, glipizide was used with a diet and exercise program and sometimes with other medications, to treat type-two diabetes.

Medication discovered in the cabin of the airplane was identified by a toxicologist at the FAA's Bioaeronautical Sciences Research Laboratory. The capsules were identified as Celecoxib, a non-steroidal anti-inflammatory, Hydrochlorothiazide, a mild diuretic used in the treatment of peripheral edema and hypertension, Glucophage (known as Metformin), which was used to treat diabetes, pioglitazone (known as Actos), used to treat diabetes, salicylic acid (known as aspirin), and simvastation (known as Zocor), which was used to treat high cholesterol. All of the medications were prescribed for the pilot and approved by the FAA in his case.

In May 2010, the pilot reported to a physician that he had some sensory loss in his feet and

toes.

The pilot reported on his most recent application for a FAA medical certificate, in March 2011, that he was diagnosed with type-two diabetes and that it was treated and controlled with medication.

A review of the pilot's medical records by a Safety Board medical officer revealed that the pilot had a history of controlled diabetes, high cholesterol, and hypertension. The pilot reported the chronic medical issues on his medical certificate applications, and a special issuance of his medical certificate was completed annually since 2007 and every six months since he first reported the type-two diabetes in 2002. Prior to the special issuance of the medical certificates, the pilot met requirements by submitting recent bloodwork that indicated the status of his glucose control. The type-two diabetes was managed with medication and diet, and over the years the pilot's maintenance of glucose levels was "excellent" when on the prescribed oral medications. The authorization of the medical certificates indicated that the pilot's control of the medical conditions allowed him to perform all airman duties associated with a first-class medical certificate and did not endanger the safety of the public.

In an interview, the pilot's wife stated that her husband was a "great" pilot, but that she was concerned about how he maintained his health and took care of his diabetes. She stated that the neuropathy in her husband's feet was such that he would be unaware of injuries to them. He had heated ski boots custom built because he couldn't discern if the numbness in his feet was due to the cold or his diabetes when on the ski slopes.

The pilot's wife stated that her husband usually controlled his condition, and kept food in his flight bag just in case he needed it. The night before the accident flight, the pilot enjoyed a "hearty meal" with an associate, but his wife wondered aloud if he had eaten a proper meal prior to departing on the flight.

ADDITIONAL INFORMATION

Electronic Instrument Data

According to the NTSB Recorders Specialist's Factual Report, engine and airplane performance data relevant to the accident flight were recovered for a variety of cockpit instruments recovered from the airplane. Examination of recorded engine data revealed no operational anomalies with the engine prior to the end of the recorded data. Flight data depicted the airplane in cruise flight between 5,000 feet and 5,700 feet msl during the final 10 minutes of the flight. The final 22 seconds of data depicted a descent from about 5,700 feet msl to about 3,700 feet msl, and an airspeed increase from 81 knots to 215 knots.

Pilot Information

Certificate:	Airline transport; Flight engineer; Flight instructor	**Age:**	60,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Glider; Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Glider; Helicopter; Instrument airplane; Instrument helicopter	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	March 24, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	6650 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N7603D
Model/Series:	PA-22-150	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	22-5304
Landing Gear Type:	Tailwheel	**Seats:**	4
Date/Type of Last Inspection:	November 26, 2010 Annual	**Certified Max Gross Wt.:**	2000 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2725 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, not activated	**Engine Model/Series:**	O-320 SERIES
Registered Owner:	OLMSTED AARON JR	**Rated Power:**	150 Horsepower
Operator:	OLMSTED AARON JR	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	DUJ,1817 ft msl	**Distance from Accident Site:**	
Observation Time:	17:56 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.71 inches Hg	**Temperature/Dew Point:**	23°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Cleveland, OH (BKL)	**Type of Flight Plan Filed:**	None
Destination:	Warehouse Point, CT (7B6)	**Type of Clearance:**	VFR
Departure Time:	16:30 Local	**Type of Airspace:**	

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:**	41.33889,-78.374725(est)

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian
Additional Participating Persons:	Ron Horak; FAA/FSDO; West Mifflin, PA Mike McClure; Piper Aircraft Company, INC; Vero Beach, FL Mike Childers; Lycoming Engines; Williamsport, PA
Original Publish Date:	July 18, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=79098