Aviation Investigation Final Report

Location:	Matinicus Island, Maine	**Accident Number:**	ERA12FA007
Date & Time:	October 5, 2011, 17:30 Local	**Registration:**	N70437
Aircraft:	Cessna 207A	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

About the time of departure, the wind at the departure airport was reported to be from 330 degrees at 13 knots with gusts to 22 knots. The pilot departed with an adequate supply of fuel for the intended 15-minute cargo flight to a nearby island. He entered a left traffic pattern to runway 36 at the destination airport and turned onto final approach with 30 degrees of flaps extended. Witnesses on the island reported that, about this time, a sudden wind gust from the west occurred. A witness (a fisherman by trade) at the airport estimated the wind direction was down the runway at 35 to 40 knots, with slightly higher wind gusts. After the sudden wind gust, he noted the airplane suddenly bank to the right about 80 degrees and begin descending. It impacted trees and powerlines then the ground. The same witness reported the engine sound was steady during the entire approach and at no time did he hear the engine falter. About 30 minutes before the accident, a weather observing station located about 6 nautical miles south-southeast of the accident site indicated the wind from the north-northwest at 24 knots, with gusts to 27 knots. About 30 minutes after the accident, the station indicated the wind from the northwest at 30 knots, with gusts to 37 knots.

Postaccident examination of the airplane, its systems, and engine revealed no evidence of preimpact failures or malfunctions that would have precluded normal operation. The evidence is consistent with the airplane's encounter with a gusty crosswind that led to the airplane's right bank and the pilot's loss of control, resulting in an accelerated stall.

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 during the approach after encountering a gusty crosswind, which resulted in an accelerated stall and uncontrolled descent.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Lateral/bank control - Not attained/maintained
Environmental issues	Crosswind - Contributed to outcome

Factual Information

History of Flight

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

HISTORY OF FLIGHT

On October 5, 2011, about 1730 eastern daylight time, a Cessna 207A, N70437, registered to Waters Aero-Marine, Inc., operated by Penobscot Island Air, crashed during approach to land at Matinicus Island Airport (35ME), Matinicus Island, Maine. Visual meteorological conditions prevailed at the time and a company visual flight rules flight plan was filed for the 14 Code of Federal Regulations (CFR) Part 135 on-demand, non-scheduled, domestic cargo flight from Knox County Regional Airport (RKD), Rockland, Maine, to 35ME. The commercial pilot, the sole occupant, was fatally injured. The flight originated from RKD about 1715.

The purpose of the flight was to transport groceries from RKD to residents who lived on Matinicus Island, Maine. The flight departed RKD about 1715, for the planned 15 minute flight. A total of 350 pounds of groceries were reportedly on-board.

According to Penobscot Island Air's dispatch log, at 1728, the pilot broadcast that he was landing at the destination airport; there was no further communication from the pilot.

A witness who is not a pilot, but is a fisherman by trade, was waiting at the destination airport for the arrival of the flight. The witness reported that the wind at the time was straight down the runway at 35 to 40 knots, but there was a wind gust slightly higher than the steady state wind speed. He reported hearing the airplane circle the airport and looked to the south to watch the approach. He noted the airplane was in a nose low descending turn (consistent with a turn onto final approach), and when it was on short final approach, the airplane was about 75 to 80 feet above ground level (agl) and east of a barn located south of the approach end of runway 36.

The witness reported that suddenly, the airplane banked to the right with the wings being nearly vertical. When asked to clarify, he though the bank angle was approximately 80 degrees. The airplane turned to the east, and began descending, but he did not hear the impact. He drove to the area where he thought the airplane would be located, but could not locate it. He then drove down another road and when he arrived there were 2 people already on scene at the crash site. The witness further reported that the engine sound was steady (like power was applied) during the entire approach and at no time did he hear the engine falter.

Several witnesses reported hearing the engine revving at full power before hearing the sound of the impact. One witness who was near the airport reported hearing a, “loud rapid revving of an airplane’s engine, then a loud crash.” He and another individual immediately ran to the accident site to render assistance.

PERSONNEL INFORMATION

The pilot, age 56, held a commercial pilot certificate with airplane single engine land rating and held a second class medical certificate issued November 15, 2010, with a restriction to wear corrective lenses. On his last medical application he listed a total time of 3,100 hours, and reported taking Atorvastatin, which is a lipid lowering agent used to treat lipid disorders and elevated cholesterol.

The pilot was hired by Penobscot Island Air in December 2004, and became qualified as PIC in the Cessna 207 in August 2005. He was also qualified in the Cessna 206 airplane. His last airman competency/proficiency check in accordance with 14 CFR Part 135.293 titled, “Initial and recurrent pilot testing requirements” and also 14 CFR 135.299 titled, “Pilot in command: Line checks: Routes and airports” was performed on August 23, 2011. The flight duration was recorded to be 1.2 hours and the results were listed as “approved.” The flight was conducted in a Cessna 207 airplane, and included crosswind landings with the result listed as satisfactory.

In the previous 90 days excluding October 4th and 5th, he flew approximately 52 hours, and in the last 30 days excluding October 4th and 5th he flew approximately 6 hours. In 2011, excluding flights in October the day before and the day of the accident, he had accrued a total time of 95.5 hours flying for Penobscot Island Air.

AIRCRAFT INFORMATION

The airplane was manufactured in 1979 by Cessna Aircraft Company as model 207A, and was designated serial number 20700552. It was powered by a Continental Motors, Inc. (formerly Teledyne Continental Motors), 300 horsepower IO-520-F engine, and equipped with a Hartzell HC-C3YF-1RF constant speed propeller.

Review of the maintenance records revealed the airplane was last inspected in accordance with a 100-Hour inspection on September 23, 2011; the airplane total time at that time was recorded to be approximately 17,105 hours. The airplane total time at the time of the accident was approximately 17,138 hours.

METEOROLOGICAL INFORMATION

A surface observation weather report taken at RKD (departure airport) at 1715, or about the time the accident flight departed indicated the wind was from 320 degrees at 13 knots with gusts to 22 knots. The visibility was 10 statute miles, and scattered clouds existed at 4,700

and 5,000 feet, while broken clouds existed at 8,000 feet. The temperature and dew point were 11 and 1 degree Celsius, respectively, and the altimeter setting was 29.98 inches of Mercury. The accident site was located approximately 15 nautical miles and 142 degrees from RKD.

A surface observation weather report taken at RKD at 1735, or approximately 5 minutes after the accident indicated the wind was from 340 degrees at 5 knots with gusts to 20 knots. The visibility was 10 statute miles, few clouds at 4,300 feet, scattered clouds at 5,000 feet, broken clouds existed at 6,500 feet. The temperature and dew point were 8 and 1 degree Celsius, respectively, and the altimeter setting was 30.00 inches of Mercury.

A National Data Buoy Center Station identified as MISM1, located at 43 degrees 47 minutes 0 seconds North latitude and 68 degrees 51 minutes 18 seconds West longitude, takes observations on the hour. A sounding at 1700 hours local on the day of the accident indicates the wind was from the NNW at 24 knots with gusts to 27 knots, the pressure was 29.94 inches of Mercury. A sounding at 1800 hours local on the day of the accident indicates the wind was from the NW at 30 knots with gusts to 37 knots, the pressure was 29.97 inches of Mercury. The accident site was located about 6 nautical miles north-northwest of MISM1 location.

One individual who lives on the Island reported to FAA that after hearing the accident he drove to the airport and when he was near there, he noted the wind was from all directions and also there were 3 foot tall swirling dust devils.

Another individual who heard the airplane fly over his house on the south side of the Island got onto an all-terrain vehicle (ATV) and he and his brother drove to the airport to meet the flight. The individual reported that when they were near the airport, they were hit with a gust of freezing rain/sleet for about 60 seconds with strong winds requiring them to take off their glasses because they could not see. After returning home his sister stated that the sky got “really black and the wind picked up when they left….”

A witness who was located near the approach end of runway 36 reported seeing the airplane over the barn which was a normal position. The individual then reported that a, “queer gust of wind” hit the house from a westerly direction which blew plants and other items from the porch. The same individual reported that the wind had been gusty all day most out of the northwest, but the gust while the airplane was on short final approach was really abrupt.

COMMUNICATIONS

The pilot was last in contact with company personnel. There were no reported communication difficulties.

AIRPORT INFORMATION

The Matinicus Island Airport is equipped with a single gravel runway designated 18/36, which is 1,700 feet long and 30 feet wide.

A single story barn structure with a roof peak of approximately 25 to 30 feet high is located about 354 feet south and slightly east of the extended cernterline from the approach end of runway 36.

Trees border both sides of the runway; however, on the east side of the runway the tall trees stop about abeam the barn; power-lines are also located east of the runway.

WRECKAGE AND IMPACT INFORMATION

The wreckage was located inverted at 43 degrees 52.125 minutes North latitude and 068 degrees 53.432 minutes West longitude, or about 543 feet east-southeast from the approach end of runway 36. The airplane came to rest on a magnetic heading of 025 degrees in a wooded area.

Examination of the accident site revealed damage to the upper and middle powerlines that were oriented on a magnetic heading of 025/205 degrees. The upper wire is a (transmission of 2,400 volts) wire about 26 feet agl, and the middle wire is the neutral or ground and is located an estimated 21 feet agl. There was no damage to the lower (phone line). The damaged wires were repaired before NTSB arrival. Damage to trees east of the damaged powerlines was noted, while several impact craters west of the resting point of the airplane were noted. Two trees with propeller slash marks located 8 feet agl were noted adjacent to the main wreckage resting point. The accident site had an odor of fuel.

Examination of the airplane revealed all components necessary to sustain flight remained attached, or partially attached. The left wing exhibited multiple semi-circular indentations on the leading edge and was structurally separated but remained connected by the aileron balance cable. The right wing remained connected but the leading edge exhibited a vertical oriented gouge on the leading edge about 26 inches inboard from the end rib, and also semi-circular indentation on the leading edge at the lift strut attach point area of the wing. Inspection of the flap actuator revealed the flaps were extended approximately 30 degrees. The empennage was structurally separated approximately 3 feet forward of the horizontal stabilizer, but remained connected by the primary and secondary flight control cables. Examination of the flight controls cables for pitch and yaw revealed continuity from each respective control surface attach point to the cockpit control. The aileron balance cable and the right aileron control cables remained connected at their respective attach points while the left aileron control cable was cut near the door post. The elevator trim tab actuator was found extended full trailing edge tab down; however, the empennage was structurally damaged and the empennage was displaced from its normal position.

Examination of the cockpit revealed the pilot’s seat was removed and the co-pilot’s seat was partially attached. The fuel selector was positioned to the left tank and was in the detent. No obstructions were noted the left wing root to the fractured fitting of the fuel metering unit in the engine compartment. Groceries were strewn in the cockpit and cabin area of the airplane.

A total of 11 boxes and 1 sack of grocery type items were identified in the wreckage. A cargo net was found in the cabin area but it was not secured.

The nose landing gear was separated but found in close proximity to the accident site. No evidence of wire strike was noted to the nose landing gear.

The engine was found upside down facing approximately 180 degrees from the main wreckage, and remained connected to the airframe by various control cables, lines and wires. Two engine mount legs and the left overboard exhaust pipe were separated and found in the debris path. The exhaust, induction tubes, oil sump, ignition harness and left hand magneto exhibited impact damage. The propeller remained attached to the engine. Crankshaft, camshaft, and valve train continuity was confirmed. The cylinders were inspected using a lighted boroscope; the combustion chambers, valves, pistons, and lower spark plugs exhibited normal operating signatures. The right hand magneto was found fractured free of its mount. The magneto turned freely by hand with impulse coupling observed and spark on the Nos. 3 and 5 cylinder upper ignition leads. The No. 2 cylinder upper ignition lead exhibited impact damage. The left hand magneto remained partially attached and exhibited impact damage. The majority of the housing and internal components were missing. The upper spark plugs were removed and exhibited normal, worn operating signatures, and light colored combustion deposits.

The fuel manifold valve exhibited impact damage and the fuel inlet line and fittings, the Nos. 2, 4, and 6 fuel nozzle lines were separated. The fuel manifold valve was disassembled and the screen was clean and free of obstruction. A fuel like substance was observed in the manifold valve housing. The throttle body / metering unit was found with impact damage and a large quantity of dirt packed in it. The control arms moved freely by hand from stop to stop. The fuel metering unit screen was removed and a small amount of aviation fuel was observed. The screen was free and clear of obstructions. The fuel pump was removed and the drive coupling was intact. The fuel pump drive turned freely by hand.

The propeller which remained attached to the engine exhibited impact damage. One blade was loose in the hub and bent aft approximately 90° midway from the hub. The second blade was bent aft approximately 45° midway from the hub and exhibited some twisting, while the third blade was bent aft 90° with twisting approximately 2/3 of the way from the hub. The propeller spinner exhibited impact damage and rotational signatures.

MEDICAL AND PATHOLOGICAL INFORMATION

A postmortem examination of the pilot was performed by the State of Maine Office of the Chief Medical Examiner, Augusta, Maine. The cause of death was listed as “blunt injuries.”

Forensic toxicology was performed on specimens of the pilot by the FAA Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma. The toxicology report stated the results were negative for carbon monoxide, cyanide, and volatiles. Unquantified amounts of

atenolol were detected in the blood and urine specimens.

Pilot Information

Certificate:	Commercial	**Age:**	56,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	November 15, 2010
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	August 23, 2011
Flight Time:	3100 hours (Total, all aircraft), 52 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N70437
Model/Series:	207A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	20700552
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	September 23, 2011 100 hour	**Certified Max Gross Wt.:**	3800 lbs
Time Since Last Inspection:	32 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	17106 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	C91 installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-520-F
Registered Owner:	WATERS AERO-MARINE, INC.	**Rated Power:**	300 Horsepower
Operator:	WATERS AERO-MARINE, INC.	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:	Penobscot Island Air	**Operator Designator Code:**	O59A

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Dusk
Observation Facility, Elevation:	RKD,56 ft msl	**Distance from Accident Site:**	15 Nautical Miles
Observation Time:	17:35 Local	**Direction from Accident Site:**	322°
Lowest Cloud Condition:	Few / 4300 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 6500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots / 20 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	340°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	8°C / 1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Rockland, ME (RKD)	**Type of Flight Plan Filed:**	Company VFR
Destination:	Matinicus Island, ME (35ME)	**Type of Clearance:**	None
Departure Time:	17:15 Local	**Type of Airspace:**	

Airport Information

Airport:	Matinicus Island Airport 35ME	**Runway Surface Type:**	Gravel
Airport Elevation:	15 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:	36	**IFR Approach:**	None
Runway Length/Width:	1700 ft / 30 ft	**VFR Approach/Landing:**	Full stop

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:**	43.86861,-68.890556

Administrative Information

Investigator In Charge (IIC):	Monville, Timothy
Additional Participating Persons:	David Pepple; FAA/FSDO; Portland, ME Steven M Miller; Cessna Aircraft Company; Wichita, KS Christopher Lang; Continental Motors, Inc.; Mobile, AL
Original Publish Date:	October 29, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	
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