Aviation Investigation Final Report

Location:	Matinicus Island, Maine	**Accident Number:**	ERA11LA405
Date & Time:	July 17, 2011, 16:25 Local	**Registration:**	N910TA
Aircraft:	Cessna U206G	**Aircraft Damage:**	Substantial
Defining Event:	Fuel starvation	**Injuries:**	1 Serious, 3 Minor
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

After takeoff from the island airport for the air taxi flight, the pilot made the initial power reduction when the airplane was at an estimated 200 feet above the ocean. At that time, the engine lost total power, and the pilot ditched the airplane. The pilot and the three passengers were able to exit the airplane before it sank. For about 1 hour until rescuers reached them, they held onto a section of the airplane's belly cargo pod that had separated during the water impact. At the time of the wreckage recovery, the left and right fuel tank filler caps were found securely installed. The fuel selector was found in the right fuel tank position. About 25 gallons of sea water and 1 pint of aviation fuel were drained from the right fuel tank. About 27 gallons of aviation fuel and 2 gallons of sea water were drained from the left tank. Examination of the wreckage did not reveal any discrepancies that would have prevented normal operation of the airplane. The physical evidence indicates that the engine lost power as a result of fuel starvation due to the position of the fuel selector on the empty right tank.

The operator required the pilot to provide the passengers a safety briefing before takeoff. However, none of the passengers were briefed or were aware that life vests were onboard the airplane. If a piece of wreckage had not been available for the passengers to hold on to, the failure of the pilot to notify the passengers of the availability of life vests could have increased the severity of the accident. As a result of the accident, the operator made numerous safety changes including mandating that the pilot read out loud a pre-takeoff briefing referencing the onboard passenger briefing guide card and offering all passengers a personal flotation device to wear during flights.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's improper fuel management, which resulted in a total loss of engine power due to fuel starvation.

Findings

Personnel issues	Fuel planning - Pilot
Aircraft	Fuel selector/shutoff valve - Incorrect use/operation
Aircraft	Fuel - Fluid management

Factual Information

History of Flight

Initial climb	Fuel starvation (Defining event)
Emergency descent	Ditching

On July 17, 2011, about 1625 eastern daylight time, a Cessna U206G, N910TA, registered to and operated by Waters Aero Marine, Inc., doing business as Penobscot Island Air, ditched in the ocean near Matinicus Island Airport (35ME), Matinicus Island, Maine. The pilot and two of three passengers received minor injuries, and the third passenger received serious injuries; the airplane sustained substantial damage. Visual meteorological conditions prevailed, and a company flight plan was filed for the on-demand air taxi flight, conducted under the provisions of 14 Code of Federal Regulations Part 135. The flight originated from 35ME, about 1623, with a destination to Knox County Regional Airport (KRKD), Rockland, Maine.

The pilot stated they departed 35ME with good weather with a light wind. The airplane did not show any abnormal indications on the takeoff roll. At approximately 200 feet into the climb, as he was reducing to climb power, the engine began to lose power. He immediately advanced the throttle and turned on the auxiliary fuel pump with no results. The engine lost total power and the pilot ditched the airplane into the ocean. All onboard were able to exit the airplane before it sank. They clung onto a section of the airplane's belly cargo pod that separated during the water impact.

When the flight did not report in on the company's frequency as required by the operator's General Operations Manual (GOM), a search and rescue operation was activated. At about 1655 an emergency locater transmitter (ELT) signal was heard. At 1724 the pilot and three passengers were located in the water by a search plane. At 1737 all were rescued by a fishing boat and taken to shore for medical attention.

The pilot held an Airline Transport pilot certificate with ratings for airplane multiengine land, airplane single-engine land and sea, and rotorcraft helicopter; with type rating for B-757, B767, and BH-212. In addition, he held a flight instructor certificate with ratings for airplane-single engine and instrument airplane. The pilot reported that he accumulated 25,300 total hours of flight experience, of which, 1,000 hour were in the same make and model as the accident airplane. His most recent Federal Aviation Administration (FAA) second-class medical certificate was issued on May 24, 2010.

The Cessna U206G, a six place all metal, high wing, single-engine airplane, variable-pitch propeller, with fix landing gear, serial number U20604102, was manufactured in 1978, and issued a standard airworthiness certificate, in the normal category. The airplane was powered by a Continental IO-520-F, 300-horsepower engine, with a McCauley three bladed propeller. The

airplane was equipped with a belly cargo pod and had extended range fuel tanks, with a capacity for 80 gallons of fuel, which 78 gallons are usable. The airplane's engine was overhauled on June 29, 2009. The engine's last inspection was performed on July 7, 2011, at which the engine had a total of 1,244.9 hours since major overhauled. The airplane's last inspection was July 7, 2011 and the airplane had a total of 10,434.6 hours at that time. The airplane was on an annual/100 hour maintenance schedule. At the time of the accident, the airplane had accumulated a total of 10,437 hours.

The wreckage was recovered 5 days after the accident from an estimated ocean floor depth of 80 feet and taken to a storage facility under FAA oversight. The left and right fuel tank filler caps were secured in their respective place. The fuel selector was observed in the right fuel tank position. Approximately 25 gallons of sea water was drained from the right fuel tank and about a pint of aviation fuel was observed. Approximately 27 gallons of aviation fuel and about two gallons of sea water were drained from the left tank. The fuselage reservoir sump tanks were filled with sea water. There was no indication of fuel slick observed on the water's surface during the recovery.

A wreckage examination by the airframe and engine manufacturer was conducted with FAA oversight. Flight control continuity was confirmed and no preimpact discrepancies were noted with the airframe that would have prevented normal operation. The engine was impact damaged and revealed saltwater submersion corrosion. The alternator, propeller governor, fuel pump, vacuum pump, and upper sparks plug were removed to facilitate an inspection of the engine. The corrosion prevented a rotational continuity confirmation of the accessory gears, valve train, cylinders, fuel system, ignition system, and induction system. The visual inspection of this engine did not reveal any abnormalities that would have prevented normal operation.

Information provided by the pilot and operator to FAA and the manufacturers revealed the airplane began the day's flight schedule with an estimated 60 gallons of fuel onboard and 10 gallons were later serviced prior to the flight to 35ME. The airplane flew 5 flights prior to the accident; a total of 2.7 hours. The Cessna Pilots Operating Handbook (POH), performance charts, indicates the airplane's fuel consumption is 16 gallons per hour with two gallons for taxi and takeoff, and one gallon to climb to 2,000 feet for each flight. Utilizing the performance data, the fuel consumption was 58.2 gallons. The airplane's fuel capacity is 78 gallons usable. The calculated total estimated fuel consumption for the five flights (58.2 gallons) plus the recovered fuel (27 gallons) reflects a total of 85.2 gallons. Based on the operator's information an exact amount of onboard fuel, and quantities for each fuel tank, could not be determine.

The operator's FAA approved GOM, section 10, Passenger Handling, requires the pilot to give an oral safety briefing before each takeoff, which includes the location of the onboard survival equipment. In addition, a safety information card must be onboard in a location convenient for use by each passenger onboard.

Interviews with the passengers revealed no safety briefing was provided before the takeoff. None of the passengers were aware that life vests or the safety information card were onboard

the airplane.

As a result of this accident the operator has implemented several changes to their GOM with respect to the fleet's fueling and tracking onboard fuel quantities, guidance when to make initial engine power reduction after takeoff, revised the onboard passenger's guide card, mandated pilot's to read out loud a pre-takeoff briefing referencing to the onboard passenger briefing guide card, modified all the fleet's airplanes ELT the capability to be activated from the cockpit, equipped the fleet's airplanes with emergency egress air bailout bottles, mandated all of the company's pilots to attend a offshore survival training course, and offer the passengers the Mustang personnel flotation device (PFD) to wear during the flight.

Pilot Information

Certificate:	Airline transport	**Age:**	69,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	May 3, 2010
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	June 27, 2010
Flight Time:	25300 hours (Total, all aircraft), 1000 hours (Total, this make and model), 18000 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 28 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N910TA
Model/Series:	U206G	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	U20604102
Landing Gear Type:		**Seats:**	4
Date/Type of Last Inspection:	July 7, 2012 100 hour	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	2 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	10435 Hrs at time of accident	**Engine Manufacturer:**	CONT MOTOR
ELT:	C91A installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO 520 SERIES
Registered Owner:	WATERS AERO-MARINE INC	**Rated Power:**	285 Horsepower
Operator:	Penobscot Island Air	**Operating Certificate(s) Held:**	On-demand air taxi (135)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KRKD,56 ft msl	**Distance from Accident Site:**	15 Nautical Miles
Observation Time:	16:15 Local	**Direction from Accident Site:**	325°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	210°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.92 inches Hg	**Temperature/Dew Point:**	29°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Matinicus Island, ME	**Type of Flight Plan Filed:**	Company VFR
Destination:	Rockland, ME (KRKD)	**Type of Clearance:**	VFR
Departure Time:	16:23 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious, 2 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 3 Minor	**Latitude, Longitude:**	44.69466,-69.382141(est)

Administrative Information

Investigator In Charge (IIC):	Obregon, Jose
Additional Participating Persons:	Richard Eilinger; FAA/FSDO; Portland, ME Peter Basile; Cessna Aircraft Company; Wichita, KS Jason Lukasik; Continental Motors Inc; Mobile, AL
Original Publish Date:	November 7, 2012
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=81132