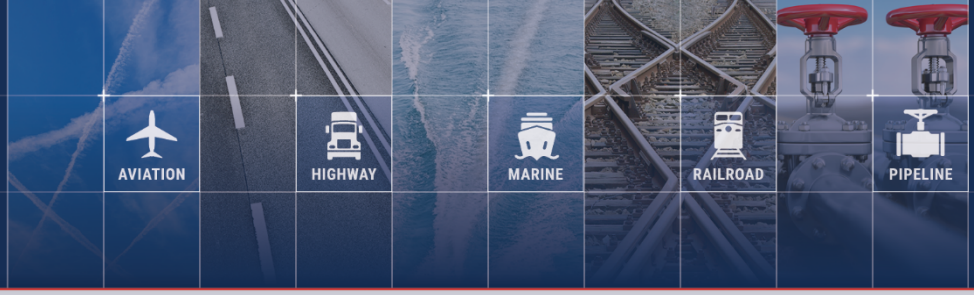

Aviation Investigation Final Report

Location:	Clifton Park, New York	**Accident Number:**	ERA12FA508
Date & Time:	August 15, 2012, 07:27 Local	**Registration:**	N678DR
Aircraft:	Beech A36TC	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation		

Analysis

The pilot and passenger were departing on an instrument flight rules business flight. During the initial climb, at an altitude of about 800 feet above the ground, the pilot advised air traffic control that the airplane had lost engine power. The pilot subsequently performed a forced landing; however, the airplane struck several trees about 1,000 feet short of an open field. Examination of the airframe revealed no deficiencies of the fuel or fuel system, and a test run of the engine showed that it was capable of producing power. However, during the test run, the right magneto was found to be non-functional, and further disassembly of the component revealed that its contact points were corroded. Once the corrosion was cleaned away, the magneto functioned normally on a test bench.

The investigation was unable to determine a definitive cause for the reported total loss of engine power, although a non-functional right magneto could result in a partial loss of power and/or perceived rough engine operation. According to the airframe manufacturer's procedure for a loss of engine power immediately after liftoff, the auxiliary fuel pump should only be placed in the "HI" position in the event of an engine-driven fuel pump failure. With the engine-driven fuel pump operating, the engine would "run rich and may quit depending on throttle setting, temperature and altitude." Due to the extent of the damage surrounding the auxiliary fuel pump switch, its preimpact position could not be determined.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A total loss of engine power for reasons that could not be determined during the postaccident

investigation and testing.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Enroute-climb to cruise	Loss of engine power (total) (Defining event)
Emergency descent	Off-field or emergency landing
Emergency descent	Collision with terr/obj (non-CFIT)

On August 15, 2012, at 0727 eastern daylight time, a Beech A36TC, N678DR, was substantially damaged when it impacted trees and terrain during a forced landing near Clifton Park, New York. The certificated airline transport pilot and the pilot-rated passenger were fatally injured. Visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed for the flight, which departed from Albany International Airport (ALB), Albany, New York at 0724, and was destined for Plattsburg Airport (PBG), Plattsburg, New York. The business flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

Review of air traffic control (ATC) information provided by the Federal Aviation Administration (FAA) revealed that the pilot contacted ATC about 0720 and requested clearance to taxi for departure. The controller initially advised the pilot to taxi to runway 1 via taxiway D and A. The pilot subsequently advised the controller that he could accept an intersection departure from runway 1 at D, and was subsequently issued that clearance. At 0722, the pilot requested to depart from runway 1 at D, but was advised that there would be a 3 minute delay due to wake turbulence from a previously departed Boeing 737. The pilot then requested to “waive” the delay, and was issued a takeoff clearance about 1 minute later. In addition to a warning of wake turbulence, the pilot was issued a departure heading of 040 degrees.

The airplane departed from runway 1 at 0724, turned northeast, and continued to climb. At 0725, at an altitude of 1,100 feet msl, the pilot advised ATC, “eight delta romeo just lost our engine”. No further transmissions were received from the pilot, and radar contact was lost about 30 seconds later at an altitude of 300 feet msl.

PERSONNEL INFORMATION

The pilot, age 68, held an airline transport pilot certificate with numerous ratings, including airplane single engine land, as well as a flight instructor certificate with numerous ratings including airplane single engine. His most recent FAA second-class medical certificate was issued on March 1, 2012 with the limitation, “must have available glasses for near vision.” A review of the pilot’s flight logs showed that he had accumulated 11,008 total hours of flight experience, 1,110 hours of which were in the accident airplane make and model. During the 90 days preceding the accident, the pilot had accumulated 143 hours of flight experience, 34 hours of which were in the accident airplane.

According to the pilot's son, the pilot was a friend of the accident airplane's owners, and was allowed to utilize the airplane anytime he needed. He further described that the pilot flew very often, and had previously flown many people in the accident airplane. While the passenger did hold a pilot certificate, he had not flown a great deal in the recent past. The purpose of the flight was for the pilot and passenger to attend a business meeting in Plattsburg, New York.

AIRCRAFT INFORMATION

According to airworthiness records maintained by the FAA, the airplane was manufactured in 1981 and was equipped with a Continental Motors TSIO-520-UB turbo-supercharged, fuel injected engine. Review of maintenance records showed that a factory rebuilt engine was installed on the airplane in May 1996, at an aircraft total time of 1,591 flight hours. The airplane's most recent annual inspection was completed on October 15, 2011 at 3,190 total aircraft hours. At the time of the accident, the airframe had accumulated 3,364 total flight hours, and the engine had accumulated 1,773 total flight hours since its installation.

AIRPORT INFORMATION

The ALB airport was comprised of two intersecting runways oriented in a 1/19 and 10/28 configuration, at an elevation of 285 feet. Runway 1 was 8,500 feet long by 150 feet wide. Taxiway A ran parallel to runway 1 and was located to the west of the runway. Taxiway D intersected runway 1 about 3,250 feet beyond the runway approach threshold. From that intersection, about 5,250 feet of runway was available for a departure.

The airplane was most recently serviced with 85 gallons of 100LL fuel by a fixed base operator at ALB on the day preceding the accident. Following the accident, a fuel quality assurance review was conducted by the fixed based operator, and no deficiencies were noted during the inspection.

METEOROLOGICAL INFORMATION

The 0753 weather observation at ALB included calm winds, 10 statute miles visibility with patches of fog present to the west and southwest, few clouds at 100 feet, scattered clouds at 8,000 feet, a broken ceiling at 13,000 feet, and a broken ceiling at 25,000 feet. The temperature was 19 degrees Celsius (C), the dew point was 18 degrees C, and the altimeter setting was 29.90 inches of mercury.

FLIGHT RECORDERS

The airplane was not equipped with any flight data recording devices, nor was it required to be; however, a hand-held global positioning system (GPS) receiver was recovered from the wreckage, and found to contain data pertaining to the accident flight. The initial data point was recorded at 0721, as the airplane taxied toward runway 1 at ALB via taxiway D. The airplane subsequently taxied onto runway 1 at 0723, at the point where the runway intersected taxiway

D.

The airplane accelerated down the runway and began climbing at 0724:26, and 8 seconds later had climbed to a GPS-derived altitude of 341 feet, at a GPS groundspeed of 88 knots. At that point, the airplane began a right turn about 1,600 feet prior to reaching the runway departure end. The airplane continued to climb while on an approximate 40-degree magnetic track. At 0725:50, the airplane reached a maximum altitude of 1,115 feet, at a GPS groundspeed of 111 knots, about 2 nautical miles northeast of the runway 1 departure end.

Over the next 30 seconds, the airplane turned about 90 degrees left as it descended and slowed. By 0726:24, the airplane had established a heading of 305 degrees, descended to 627 feet, and slowed to a GPS groundspeed of 85 knots. About 25 seconds later, the airplane's final position was recorded at an altitude of 302 feet and a GPS groundspeed of 76 knots.

A plot of the airplane's position for the final moments of the flight showed that an open field about 1,000 feet long, and aligned with the airplane's final approach path, was located about 1,000 feet west of its final GPS-recorded position. Additionally, a two-lane asphalt road paralleled the airplane's final approach path; however utility wires paralleled and crossed the road at numerous points in the vicinity of the accident site.

WRECKAGE AND IMPACT INFORMATION

The accident site was located in a residential area approximately 3 miles northeast of ALB, at an elevation of 260 feet. The initial impact point (IIP) was identified by several damaged tree limbs, at a height of about 30 feet, and was located about 45 feet west of the airplane's final GPS-recorded position. The wreckage path about was about 150 feet long, and oriented approximately 320 degrees magnetic. A ground scar, along with the outboard portion of the right wing and aileron, were located about 95 feet beyond the IIP, along the wreckage path. The main portion of the wreckage consisted of the fuselage and inboard portions of both wings, and was located about 45 feet from the ground scar. The fuselage remained upright, and was oriented on a 280-degree magnetic heading. The outboard portion of the left wing was located about 10 feet beyond the main wreckage.

The left wing remained attached to the fuselage by all four of its attachment bolts. The outboard portion of the wing separated in the vicinity of the landing gear, and the left main landing gear remained stowed in its well. The right wing also remained attached to the fuselage by its attachment bolts, with the outboard portion separating near the outer portion of the flap. The right main landing gear remained stowed within its well. The landing gear actuator was in the retracted position.

Control continuity was confirmed from the control column to the elevator and left aileron, and through a fracture of the right aileron bellcrank to the right aileron, and rudder control continuity was confirmed from both rudder pedals to the rudder. Measurement of the left and right elevator trim tab actuators revealed extensions corresponding to a 10-degree tab-down

position (nose up trim). Measurement of both flap actuator rods corresponded to a flaps retracted position.

The fuel selector was found in the left tank position. Examination of the fuel system revealed that it remained continuous from the firewall, through the selector valve, to both fuel tanks, with no breaches or obstructions noted. Residual fuel was observed in both main and both auxiliary wingtip fuel tanks. The color and odor of the fuel appeared consistent with 100LL aviation fuel, and all samples taken were absent of water or debris. The auxiliary fuel pump switch was found in the HIGH position, though the structure surrounding the switch was deformed consistent with impact.

The pilot and copilot seats remained attached to the seat rails with no deformation noted. The mounting points and buckles for both the pilot and copilot restraints appeared intact and undamaged, and first responders reported that the pilot and passenger were wearing both lap and shoulder restraints upon arriving at the accident scene.

The engine remained attached to the fuselage, and 2 of the 3 propeller blades exhibited impact-related damage. One blade was bent aft about 45 degrees near the mid-span point and the other blade was bent aft about 90 degrees near the mid-span point. None of the blades exhibited chordwise scratching or leading edge gouging.

The engine was separated from the airframe and shipped to the manufacturer for a test run. The impact-related damage was generally concentrated near the aft portion of the engine. The induction system riser to the number one cylinder, the induction system “Y” pipe, and oil cooler, along with several fuel system fittings, were replaced to facilitate the test run. During preparation for the test run, a red clay/dirt-like substance was found at an impact-damaged port of the fuel metering unit. The fuel manifold valve screen, located downstream of the fuel metering unit within the fuel system, was examined and found to be absent of debris or contamination.

The engine was subsequently placed in a test cell and started normally on the first attempt without hesitation or stumbling. The engine rpm was advanced in steps to 1,200, 1,600, and 2,450 rpm for a period of 5 minutes per step to allow for warm-up. The throttle was then advanced to full power for 5 minutes before the throttle was rapidly advanced from idle to full power 6 times. The engine performed normally throughout each of the tests without any hesitation, stumbling, or interruption of power; however, testing of the magnetos showed that the right magneto was inoperative.

Following the test run, the right magneto was removed from the engine and examined. The points of the magneto exhibited corrosion. The corrosion was subsequently cleaned from the points, and the magneto was then run on a test stand. The magneto operated normally, and further disassembly revealed no anomalies.

MEDICAL AND PATHOLOGICAL INFORMATION

The pilot sustained serious injuries during the accident and subsequently succumbed to those injuries on August 28, 2013. An autopsy and toxicological testing were not performed.

ADDITONAL INFORMATION

The airframe manufacturer published an emergency procedure detailing the actions pilots should take following a loss of engine power immediately after lift-off. After eliminating the possibility of fuel exhaustion, the procedure advised the pilot:

“2. Auxiliary Fuel Pump – LOW If a Failed Engine-Driven Fuel Pump is Suspected (Indicated by zero fuel flow):

3. Auxiliary Fuel Pump – HI”

A warning was noted below that stated:

“The only reason for the high (HI) boost position is to supply fuel for priming prior to starting and to supply fuel to the engine if the engine-driven fuel pump fails. DO NOT USE THIS POSITION FOR ANY OTHER REASON. If high (HI) boost is selected when the engine-driven pump is operating, the engine will run rich and may quit depending on throttle setting, temperature and altitude.”

The checklist advised that if an ignition problem was suspected, the pilot should verify that the magnetos were selected to the “BOTH” position.

The first step of the procedure for a rough running engine immediately after lift-off stated, “Ensure auxiliary fuel pump is not on HI.”

Pilot Information

Certificate:	Airline transport; Flight instructor	**Age:**	68,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:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	March 1, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	11008 hours (Total, all aircraft), 1110 hours (Total, this make and model), 10985 hours (Pilot In Command, all aircraft), 212 hours (Last 90 days, all aircraft), 75 hours (Last 30 days, all aircraft)		

Information

Certificate:	Commercial	**Age:**	67,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):		**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	December 20, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N678DR
Model/Series:	A36TC	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal; Utility	**Serial Number:**	EA-216
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	October 15, 2011 Annual	**Certified Max Gross Wt.:**	3650 lbs
Time Since Last Inspection:	173 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3191 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-520 SER
Registered Owner:	On file	**Rated Power:**	300 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:	ALB,285 ft msl	**Distance from Accident Site:**	3 Nautical Miles
Observation Time:	07:53 Local	**Direction from Accident Site:**	208°
Lowest Cloud Condition:	Few / 1 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 130 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.89 inches Hg	**Temperature/Dew Point:**	19°C / 18°C
Precipitation and Obscuration:	N/A - Patches - Fog		
Departure Point:	ALBANY, NY (ALB)	**Type of Flight Plan Filed:**	IFR
Destination:	Plattsburgh, NY (PBG)	**Type of Clearance:**	IFR
Departure Time:	07:24 Local	**Type of Airspace:**	

Airport Information

Airport:	Albany International ALB	**Runway Surface Type:**	Asphalt
Airport Elevation:	285 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	01	**IFR Approach:**	None
Runway Length/Width:	8500 ft / 150 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	42.801666,-73.793052

Administrative Information

Investigator In Charge (IIC):	Diaz, Dennis
Additional Participating Persons:	Gordon E Nichols; FAA/FSDO; Latham, NY Jason Lukasik; CONTINENTAL MOTORS, INC.; Mobile, AL Brian Weber; Beechcraft; Wichita, KS
Original Publish Date:	August 13, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=84669