



National Transportation Safety Board Aviation Accident Final Report

Location:	Alabaster, AL	Accident Number:	ERA14LA083
Date & Time:	01/01/2014, 1420 CST	Registration:	N351AE
Aircraft:	BELLANCA 17-30A	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (total)	Injuries:	1 Minor
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot stated that, while en route on the approximate 11-mile flight, the engine began to “stumble” and run roughly. The pilot activated the fuel boost pump, but, shortly thereafter, the engine experienced a total loss of power. The pilot subsequently maneuvered the airplane toward the backyard of a residence. The airplane impacted trees and came to rest inverted, which resulted in substantial damage to the airplane. Postaccident examination of the airplane revealed that the right main fuel tank contained about 10.5 gallons of fuel. About 0.5 gallon of fuel was drained from the left main fuel tank. The auxiliary fuel tank contained no fuel, and the gascolator was absent of fuel. The engine-driven fuel pump line and return fuel line were absent of fuel. Postaccident examination of the engine revealed no anomalies. During a test run, the engine started on the first attempt, accelerated smoothly, and advanced through all power settings with no anomalies observed. Although the airplane’s fuel selector was found set to the right main tank position during postaccident examination, based on the lack of fuel in the fuel lines and gascolator, it is likely that it was set to the left main or the auxiliary fuel tank during the flight and moved to the right main tank position just before or after impact.

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

Aircraft	Fuel - Fluid management (Cause) Fuel - Fluid level (Cause)
Personnel issues	Use of equip/system - Pilot (Cause)

Factual Information

On January 1, 2014, about 1420 central standard time, a Bellanca 17-30A, N351AE, was substantially damaged during a forced landing following a total loss of engine power in Alabaster, Alabama. The private pilot sustained minor injuries. Visual meteorological conditions prevailed, and no flight plan was filed for the flight, which departed Bessemer Airport (EKY), Bessemer, Alabama, approximately 1405, and was destined for Shelby County Municipal Airport (EET), Alabaster, Alabama. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91.

The pilot departed on the approximate 11-mile flight between EKY and EET, and climbed to a cruise altitude of 2,600 feet. He stated that while enroute, the engine began to "stumble" and run rough. The pilot responded by activating the fuel boost pump; however, the engine continued to run rough, and subsequently experienced a total loss of power. The pilot stated he did not have time to attempt to restart the engine, and he maneuvered the airplane toward a row of trees in the backyard of a residence. The airplane impacted the trees and came to rest inverted, resulting in substantial damage.

Examination of the airplane by a Federal Aviation Administration (FAA) inspector who responded to the scene revealed that the airplane's fuel selector was set to the right wing tank position, and that the right wing tank contained an undetermined amount of fuel. A sample taken from the tank was absent of contamination.

The airplane was removed from the site for further examination. About .5 gallons of fuel was drained from the left main fuel tank, and about 10.5 gallons were drained from the right main fuel tank. The auxiliary fuel tank contained no fuel, and the gascolator was absent of fuel. The engine-driven fuel pump line and return fuel line were absent of fuel. The engine was removed from the airplane and sent to the manufacturer's facility for examination.

The pilot reported to the FAA that he departed from EKY with 19.5 gallons of fuel, but indicated on the NTSB Accident Report Form that the airplane contained 13 gallons of fuel at the time of departure. The pilot did not state which fuel tank was selected at the time of departure, nor did he state whether he attempted to switch the fuel selector to another tank upon experiencing the engine roughness.

The pilot held a private pilot certificate with a rating for airplane single-engine land. He reported 656 total hours of flight time, of which 120 hours were in the accident airplane make and model. His most recent FAA third-class medical certificate was issued in February 2013.

The airplane was manufactured in 1973, and was equipped with a Continental Motors Inc., IO-520 series 285-hp reciprocating engine. The airplane's most recent annual inspection was completed on June 3, 2013 at a total airframe time of 2,234.6 hours. Maintenance records indicated that the engine was rebuilt at the manufacturer's facility in April 1994 at a total airframe time of 1,955.1 hours. Maintenance logs also indicated that the #5 cylinder was replaced on November 25, 2013, at a time since engine overhaul of 304.3 hours.

The 1453 weather observation at EET, located about 4 miles southeast of the accident site, included variable wind at 5 knots, 10 miles visibility, a broken cloud layer at 3,800 feet, an overcast cloud layer at 6,00 feet, temperature 10 degrees C, dew point 4 degrees C, and an altimeter setting of 30.18 inches of mercury.

Examination of the engine at the manufacturer's facility revealed impact damage to the #5 cylinder cooling fins, as well as the fuel injection line. The #5 top sparkplug and ignition lead were replaced to facilitate a test run of the engine. Borescope inspection of each of the cylinders, including their pistons, exhaust valves, and intake valves revealed normal operating signatures. The engine started on the first attempt, accelerated smoothly, and advanced through all power settings with no anomalies observed. Several rapid advancements of the throttle from the idle to full power settings also revealed no anomalies.

According to the manufacturer's pilot operating handbook, at a cruise altitude of 2,500 feet in standard atmospheric conditions, the airplane consumed between 10 and 16 gallons of fuel per hour, depending on the engine power setting.

History of Flight

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

Pilot Information

Certificate:	Private	Age:	49
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Without Waivers/Limitations	Last Medical Exam:	02/19/2013
Occupational Pilot:	No	Last Flight Review or Equivalent:	11/19/2013
Flight Time:	656 hours (Total, all aircraft), 120 hours (Total, this make and model), 656 hours (Pilot In Command, all aircraft), 2 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	BELLANCA	Registration:	N351AE
Model/Series:	17-30A	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	73-30577
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	06/03/2013, Annual	Certified Max Gross Wt.:	3325 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	2261 Hours	Engine Manufacturer:	CONT MOTOR
ELT:	C91 installed, activated, did not aid in locating accident	Engine Model/Series:	IO 520 SERIES
Registered Owner:	ELOM ANTHONY W	Rated Power:	285 hp
Operator:	ELOM ANTHONY W	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	EET, 586 ft msl	Observation Time:	1453 CST
Distance from Accident Site:	4 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	145°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	10° C / 4° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	5 knots, 130°	Visibility (RVR):	
Altimeter Setting:	30.19 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Bessemer, AL (EKY)	Type of Flight Plan Filed:	None
Destination:	Alabaster, AL (EET)	Type of Clearance:	None
Departure Time:	1405 CST	Type of Airspace:	Class E

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor		

Administrative Information

Investigator In Charge (IIC):	Allison N Diaz	Adopted Date:	06/22/2015
Additional Participating Persons:	George Colbow; FAA/FSDO; Birmingham, AL Nicole Channon; Continental Motors Inc; Mobile, AL		
Publish Date:	06/22/2015		
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=88614		

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