Aviation Investigation Final Report

Location:	Rainelle, West Virginia	**Accident Number:**	ERA10LA485
Date & Time:	September 18, 2010, 17:15 Local	**Registration:**	N86BR
Aircraft:	Beech 58	**Aircraft Damage:**	Substantial
Defining Event:	Sys/Comp malf/fail (non-power)	**Injuries:**	5 Minor
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

According to the pilot, while in cruise flight, the right engine lost power. He attempted to move the left fuel selector to the crossfeed position in an attempt to restart the right engine, but the fuel selector knob would not turn clockwise to that position. Shortly thereafter, the left engine lost power. The pilot feathered both propellers and set the airplane up for its best glide angle in an attempt to reach the closest airport. His attempts to restart the engines during the descent were unsucessful. The pilot made a forced landing in the backyard of a private residence, and the airplane collided with a house, sustaining substantial damage. A postaccident examination of the fuel system revealed that the fuel selectors were indicating "on" for both fuel tanks, and the left fuel selector knob would not rotate clockwise to the crossfeed position. When the left fuel selector valve was disassembled, it was found to be rigged incorrectly. In the “on” position, the valve should have drawn fuel from the left and right fuel tanks. Instead, it drew fuel from the right tank only. The right fuel tank was found to be empty of all usable fuel. A review of the airplane's maintenance records revealed that the left fuel selector was removed, resealed, and reinstalled prior to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The improper rigging of the fuel selector by maintenance personnel, which resulted in a total loss of engine power.

Findings

Personnel issues	Repair - Maintenance personnel
Aircraft	Return to service - Incorrect service/maintenance
Aircraft	Fuel selector/shutoff valve - Inadequate inspection

Factual Information

History of Flight

Enroute-cruise	Sys/Comp malf/fail (non-power) (Defining event)
Enroute-cruise	Fuel starvation
Enroute-cruise	Loss of engine power (total)
Emergency descent	Off-field or emergency landing
Emergency descent	Collision with terr/obj (non-CFIT)

On September 18, 2010, at 1715 eastern daylight time, a Beech 58, N86BR, was substantially damaged during a forced landing following a total loss of engine power near Rainelle, West Virginia. The certificated commercial pilot and four passengers received minor injuries. Visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed for the flight which departed Morgantown Municipal Airport (MGW), Morgantown, West Virginia at 1645, and was destined for Bluefield, West Virginia. The non-scheduled passenger flight was conducted under the provisions of 14 Code of Federal Regulations Part 135.

According to the pilot, while in cruise flight at 8,000 feet mean sea level, an uncommanded right engine shutdown occurred. He attempted to move the left fuel selector to the crossfeed position in an attempt to restart the right engine, but the fuel selector knob would not turn clockwise to the crossfeed position. Shortly thereafter, the left engine shut down. He feathered both propellers and set the airplane up for its best glide angle in an attempt to reach the closest airport. Repeated attempts were made to restart the engines during the descent, but neither engine would restart. Due to the rate of descent, the pilot determined he would not be able to reach a nearby airport and made a forced landing in the backyard of a private residence. The airplane slid for approximately 60 feet before making contact with the back side of a house.

According to a Federal Aviation Administration (FAA) inspector, an on-scene examination of the airplane revealed that all major structural components of the airplane were located at the accident site. Flight control continuity was established to the ailerons, and the rudder and elevator control cables were broken and exhibited signs of overstress failure. The landing gear were extended, and were separated from the aircraft. The wing flaps were found in the extended position. The engine and propeller controls were jammed and continuity could not be established due to impact damage. The pilot did not report any flight control or propeller control anomalies during the accident flight. Examination of the three-bladed constant speed propellers revealed that both propellers remained attached to their respective engines at the accident site. Examination of the left engine propeller revealed that there was no evidence that it had been rotating at the time of the accident and that it was in the feathered position. Examination of the right propeller revealed that there was no evidence that the propeller was rotating under engine power and that it was not feathered. No flight control anomalies were

noted during the on-scene examination.

An examination of the fuel system revealed that the fuel selectors were indicating “On” for both fuel tanks. It was verified that the left fuel selector knob would not rotate clockwise to the crossfeed position. The left fuel selector was disassembled, and it was determined that the left fuel selector valve was rigged incorrectly in the crossfeed position. Further examination of the left fuel selector knob revealed that when in the "On" position, indicating that the left engine was drawing fuel from the left fuel tank, fuel was actually drawing from the right tank.

A review of the aircraft maintenance records revealed that the left fuel selector was removed on September 8, 2010, resealed and reinstalled during maintenance and approved for return to service. Examination of the right fuel selector knob revealed no anomalies.

Further examination of the airframe revealed that the fuel caps were found closed and locked. The right and left fuel tanks were accessed through the access panels at their respective wing roots. The right tank was found to have no usable fuel remaining in the tank. The right fuel tank system was not breached during the accident and there was no evidence of fuel leakage from the right fuel tank at the accident site.

The left main fuel tank was breached at the leading edge of the left wing, outboard of the engine, as a result of contact with the house. Evidence of a fuel leak of an unknown quantity was observed on the ground due to dead grass in the immediate vicinity of impact with the house. There was also a small amount of leakage under the left wing where the airplane came to rest. The remaining fuel was drained from the left fuel tank by the FAA inspector prior to movement of the airplane. The recovered fuel totaled approximately 5 gallons. The left and right fuel tank sending units were moved through their full range of motion from empty to full and back to empty. The cockpit-mounted left and right fuel level indicator movements were coordinated with the movement of the floats for each respective tank; both indicators were indicating empty at the accident site. The left and right wing-mounted sight gage floats were also moved through their full range of motion and both indicated appropriately from empty to full.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	32,Male
Airplane Rating(s):	Single-engine land; 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	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	May 17, 2010
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	April 13, 2010
Flight Time:	3787 hours (Total, all aircraft), 208 hours (Total, this make and model), 3731 hours (Pilot In Command, all aircraft), 107 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N86BR
Model/Series:	58	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	TH-1072
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	September 8, 2010 Annual	**Certified Max Gross Wt.:**	5400 lbs
Time Since Last Inspection:	5 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	5321 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO 550 C
Registered Owner:	ALBATROSS AIRCRAFT SALES INC	**Rated Power:**	285 Horsepower
Operator:	ALBATROSS AIRCRAFT SALES INC	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	VJBA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	BLF,2857 ft msl	**Distance from Accident Site:**	20 Nautical Miles
Observation Time:	16:52 Local	**Direction from Accident Site:**	30°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.23 inches Hg	**Temperature/Dew Point:**	28°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Morgantown, WV (MGW)	**Type of Flight Plan Filed:**	IFR
Destination:	Bluefield, WV (BLF)	**Type of Clearance:**	IFR
Departure Time:	16:45 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	4 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	5 Minor	**Latitude, Longitude:**	37.970554,-80.806114(est)

Administrative Information

Investigator In Charge (IIC):	Alleyne, Eric
Additional Participating Persons:	John Riggs; FAA/FSDO; Charleston, WV
Original Publish Date:	December 1, 2011
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=77333