



National Transportation Safety Board Aviation Accident Final Report

Location:	Vine Grove, KY	Accident Number:	ERA16LA062
Date & Time:	12/04/2015, 1615 EST	Registration:	N2991B
Aircraft:	BEECH D35	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The private pilot reported that, when he departed for the personal flight, there were 15 gallons of fuel in each of the wing fuel tanks. During the initial climb, the airplane experienced a total loss of engine power. Subsequently, the pilot performed an emergency off-airport landing. During the landing, the airplane sustained substantial damage to the fuselage, wings, and firewall.

Postaccident examination of the airframe and engine revealed no evidence of any preimpact mechanical anomalies that would have precluded normal operation. The right fuel tank was breached, and an undetermined amount of fuel was noted in the left fuel tank. About 1 gallon of fuel was drained from the auxiliary fuel tank drain valve. Although the pilot stated that he did not remember which fuel tank he had selected before takeoff, given the airplane's fuel state that he reported before takeoff and the fuel observed in the airplane postaccident, it is likely that the pilot mistakenly departed with the fuel selector positioned to the auxiliary fuel tank, which according to the manufacturer, was to be used only during level flight and not for takeoff or landing and that this resulted in the subsequent total loss of engine power due to fuel starvation.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to ensure that the fuel selector was properly positioned before takeoff, which resulted in the subsequent total loss of engine power due to fuel starvation.

Findings

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

Factual Information

On December 4, 2015, at 1615 eastern standard time, a Beechcraft D35, N2991B, was substantially damaged during a forced landing after takeoff from the Vine Grove Airport (70KY), Vine Grove, Kentucky. The private pilot was not injured. The airplane was registered to and operated by the pilot under the provisions of Title 14 *Code of Federal Regulations* Part 91 as a personal flight. Visual meteorological conditions prevailed and no flight plan was filed.

The pilot reported that his intention was to conduct some "pattern work." He conducted a preflight inspection of the airplane; visually checked the fuel in the left and right fuel tanks and estimated that they each contained 15 gallons. The airplane was equipped with a 20-gallon auxiliary fuel tank but the pilot reported that its fuel quantity could not be checked visually.

The pilot started the engine, taxied to the run-up area, and performed the before takeoff checklist items, with no anomalies noted. He then taxied to the active runway and configured the airplane for takeoff. During the climbout, about 150 feet above ground level, the engine "quit." He did not have enough altitude to return to the airport, or time to attempt an engine restart or make any radio calls. He subsequently performed an emergency off-airport landing to a road.

Examination of the airplane by a Federal Aviation Administration inspector revealed that the right wing and firewall were buckled. The left main wing fuel tank had an undetermined amount of fuel. Fuel samples were taken from the left main wing tank and the fuselage auxiliary tank. The samples appeared to be clear with no water or debris noted. The right wing fuel tank was breached and the fuel quick drain valve was jammed. The smell of fuel in and around the airplane was noted. The fuel selector was moved from the off position and back to the auxiliary position, and when the fuel supply line was removed from the carburetor, very little fuel exited.

The fuel strainer was removed and a very small amount of fuel came out; it was inspected and found to be free of debris. The auxiliary fuel tank drain valve was removed and about 1 gallon of fuel drained out.

A review of the D35 pilot's operating handbook (POH) revealed that the airplane was equipped with a 20-gallon fuel tank in each wing in which 34 gallons are usable. All of the fuel in the auxiliary tank was usable. The top spark plugs were removed and they exhibited normal wear and had light gray deposits in the electrode areas. The crankshaft was rotated by hand, and spark was noted on each spark plug lead.

After the examination of the airplane, the pilot reported, "The D-35 has only one fuel gage and two switches used to select the tank indicated. The fuel selector has four positions, left, right, auxiliary and off. You can have the fuel selector on the auxiliary tank and the fuel indicator on a different tank. It is possible that I mistakenly verified the fuel level in the auxiliary tank with the indicator set to one of the main tanks." The pilot stated that he did not remember which fuel tank he had selected before takeoff.

According to the limitations section of the D35 POH: "Use auxiliary fuel in level flight only and do not use for takeoff or landing. Use at least 10 gallons from left main tank before use of auxiliary fuel or right main tank."

History of Flight

Initial climb	Fuel starvation Loss of engine power (total)
Landing	Off-field or emergency landing

Pilot Information

Certificate:	Private	Age:	53, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Lap Only
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 With Waivers/Limitations	Last FAA Medical Exam:	09/03/2015
Occupational Pilot:	No	Last Flight Review or Equivalent:	09/04/2015
Flight Time:	956 hours (Total, all aircraft), 18 hours (Total, this make and model), 793 hours (Pilot In Command, all aircraft), 18 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	BEECH	Registration:	N2991B
Model/Series:	D35 NO SERIES	Aircraft Category:	Airplane
Year of Manufacture:	1953	Amateur Built:	No
Airworthiness Certificate:	Utility	Serial Number:	D-3629
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	09/02/2015, Annual	Certified Max Gross Wt.:	2727 lbs
Time Since Last Inspection:	18 Hours	Engines:	1 Reciprocating
Airframe Total Time:	6830.48 Hours as of last inspection	Engine Manufacturer:	Continental
ELT:	C91 installed, activated, did not aid in locating accident	Engine Model/Series:	E 225-8
Registered Owner:	On file	Rated Power:	225
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	FTK, 755 ft msl	Distance from Accident Site:	4 Nautical Miles
Observation Time:	1608 EST	Direction from Accident Site:	357°
Lowest Cloud Condition:	Unknown	Visibility	4 Miles
Lowest Ceiling:	Overcast / 5500 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	/ None
Wind Direction:	350°	Turbulence Severity Forecast/Actual:	/ N/A
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	15° C / 14° C
Precipitation and Obscuration:	Light - Rain; Moderate - Mist		
Departure Point:	Vine Grove, KY (70KY)	Type of Flight Plan Filed:	None
Destination:	Vine Grove, KY (70KY)	Type of Clearance:	None
Departure Time:	1614 EST	Type of Airspace:	Class G

Airport Information

Airport:	VINE GROVE (70KY)	Runway Surface Type:	N/A
Airport Elevation:	680 ft	Runway Surface Condition:	Unknown
Runway Used:	N/A	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced Landing

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	37.815833, -85.964722 (est)

Administrative Information

Investigator In Charge (IIC):	Eric Alleyne	Report Date:	11/15/2018
Additional Participating Persons:	Charles B Holsclaw; FAA/FSDO; Louisville, KY		
Publish Date:	11/15/2018		
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=92407		

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