



Aviation Investigation Final Report

Location:	Colbert, Oklahoma	Accident Number:	CEN15FA316
Date & Time:	July 26, 2015, 15:13 Local	Registration:	N252G
Aircraft:	Beech V35B	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (total)	Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane was in level cruise flight on the second leg of a cross-country flight when the engine lost power. The pilot declared an emergency with air traffic control (ATC) and requested the nearest airport. As the airplane was descending through 8,360 ft mean sea level (msl), the ATC controller told him that there was an airport (Airport A) at his 12-o'clock position and about 15 nautical miles (nm) away. However, there was another airport (Airport B) that was about 7.5 nm away that the controller did not tell the pilot about at this time.

The pilot responded that he had partial power and would see if he could make it to Airport A. He then asked for and received a vector to Airport A. About 2 minutes later, as the airplane descended through 6,023 ft msl, the pilot asked the controller if there was something closer, and the controller told him that there was another airport (Airport B) at his 3- to 4-o'clock position and 10 nm away. The pilot requested a turn toward Airport B, the controller told the pilot to turn right and proceed direct, and the airplane turned 90° right toward Airport B. Airport B was actually about 8.2 nm away.

About 2 minutes later, as the airplane descended through 4,260 ft msl, the controller advised the pilot that there was a private airstrip about 1 mile behind him. The airstrip was actually 10 nm away. The pilot replied, "wish I knew where that was ..." The controller then provided the pilot with runway information for Airport B. The pilot responded, "where's that private strip?" The controller responded, "it's not close enough for you to get to." As the airplane descended through 3,370 ft msl, the controller then gave the pilot his position and distance to Airports A and B. There were no further transmissions from the pilot.

Radar data showed that the airplane made a 180° right turn to the south. About 2 minutes later, the airplane made a 270° left turn and rolled out on a westerly heading. At the last radar contact, the airplane was westbound at 700 ft msl. The terrain elevation in the area was about 660 ft msl. The airplane impacted trees and then the ground. The site was surrounded by fields suitable for a forced landing, and it is likely that if the pilot had selected one of these fields as his landing site, the damage to the airplane

and severity of injuries to the occupants would have been minimized.

Postaccident examination revealed that the left fuel tank was full, and the fuel quantity in the right tank could not be determined due to impact damage. The fuel selector valve handle was positioned between the left and right tank detent positions. Fuel selector continuity was established for each detent by blowing air through the valve. No air flowed through the valve when the fuel selector was positioned as found between the right and left tank detents. No preimpact failures or malfunctions with the airframe or engine were found that would have precluded normal operation.

The pilot's autopsy revealed that he had severe coronary heart disease including atherosclerosis of the coronary arteries. The posterior descending coronary artery was found to have about 90% stenosis and the left main, left anterior descending, and right coronary arteries had about 25% stenosis. Given that there was active radio contact between the pilot and ATC and no mention by the pilot of chest pain, shortness of breath, weakness, or palpitations, it is unlikely that his heart disease contributed to the accident.

Toxicology tests showed the pilot used rosuvastatin, a prescription medication in the class of medications called statin antilipemic agents that is used to reduce blood cholesterol and triglyceride levels. The rosuvastatin was found in the pilot's urine but not in his blood.

It is likely that while switching tanks during cruise flight, the pilot inadvertently moved the fuel selector to the as-found intermediate position such that it blocked fuel to the engine, which resulted in fuel starvation and a loss of engine power. The Pilot's Operating Handbook (POH) listed "Fuel Selector Valve – SELECT OTHER TANK (Check to feel detent)" as the first item in the emergency procedure for an engine failure. Thus, it is likely that, when the engine lost power, the pilot failed to properly position the selector so that fuel could be restored and a restart possible.

At the time that the pilot reported the engine failure to ATC, the airplane was 15.8 nm from Airport A, 7.5 nm from Airport B, and 6.2 nm from the private airstrip. According to radar data, the airplane traveled a total distance of about 7.9 nm from the point at which the pilot reported the engine failure to the accident site. The POH states that, with the landing gear and flaps retracted, cowl flaps closed, propeller at low rpm, and maintaining an airspeed of 105 kts, the airplane's glide distance is about 1.7 nm per 1,000 ft of altitude above the terrain. If the controller had provided accurate information to the pilot about the location of the nearest airports as required by Federal Aviation Administration ATC procedures and if the pilot had immediately acted on that information, based on the radar data, the pilot might have been able to glide to and land at Airport B or the private airstrip.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to properly position the fuel selector, which resulted in a total loss of engine power due to fuel starvation. Contributing to the severity of the accident was the pilot's failure

to select an appropriate location for a forced landing, which resulted in the airplane impacting trees. Contributing to the accident was the air traffic controller's failure to provide the pilot accurate information on nearby emergency airport and airfields and the pilot's failure to properly follow the airplane's emergency procedures in the Pilot's Operating Handbook that would have led him to properly position the fuel selector and restore fuel flow to the engine.

Findings

Personnel issues	Use of equip/system - Pilot
Aircraft	Fuel selector/shutoff valve - Incorrect use/operation
Personnel issues	Identification/recognition - Pilot
Personnel issues	Use of policy/procedure - Pilot
Personnel issues	Accuracy of communication - ATC personnel

Factual Information

History of Flight

Enroute-cruise	Loss of engine power (total) (Defining event)
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This report was modified on 7/14/2017. Please see the public docket for this accident to view the original report.

On July 26, 2015, at 1513 central daylight time, a Beechcraft V35B airplane, N252G, struck trees and impacted terrain during a forced landing near Colbert, Oklahoma. The private pilot was fatally injured, and the passenger was seriously injured and died 5 days later. The airplane was substantially damaged. The airplane was registered to Avprop, LLC and operated by the pilot under the provisions of 14 Code of Federal Regulations (CFR) Part 91 as a personal flight. Visual meteorological conditions prevailed at the time of the accident and an instrument flight rules flight plan had been filed. The flight originated from Springfield-Branson National Airport (SGF), Springfield, Missouri, at 1317.

The pilot and his wife were returning to Fort Worth, Texas, from Jackson, Michigan. Earlier in the day, the couple departed from Jackson County-Reynolds Field (JXN), Jackson, Michigan, and flew to SGF where they landed and refueled, taking on 45 gallons of aviation gasoline. A fuel receipt showed a time of 1252:47. GPS data showed that the airplane took off to the west-northwest and then turned southwest toward Fort Worth. The airplane climbed to and maintained 11,000 ft. mean seal level (msl).

About 1501, the pilot contacted the Fort Worth Air Traffic Control Center (ZFW) and declared an emergency reporting that the airplane had lost engine power and that he needed to "get to an airport right away." As the airplane was descending through 8,360 ft. msl, the ZFW air traffic controller told the pilot that the North Texas Regional Airport (GYI), Sherman/Denison, Texas, was at his 12 o'clock and about 15 miles. The pilot responded that he had partial power and would see if he could make it to GYI. The pilot asked the controller for a vector to GYI; the controller instructed the pilot to turn to a heading of 245°. About 2 minutes later, as the airplane descended through 6,023 ft. msl, the pilot asked the ZFW controller if there was something closer. The controller told him that the Durant Regional Airport (DUA), Durant, Oklahoma, was at the pilot's 3 to 4 o'clock and 10 miles. The pilot requested a turn toward DUA; the controller told the pilot to turn right direct DUA. Radar data showed that the airplane made a right 90° turn to about a 360° heading.

At 1505, as the airplane descended through 4,260 ft. msl, the controller advised the pilot that there was a private airfield about a mile behind him. The pilot replied, "wish I knew where that was ..." The controller then provided the pilot runway information for DUA, and said that the minimum instrument flight rules altitude for the area was 2,700 ft. msl. The pilot responded, "where's that private strip ...?" The controller responded, "it's not close enough for you to get to ... there is GYI at your 2 to 3 o'clock 10 miles, Durant is at your 6 to 7 o'clock and 10 miles." There was no response. The ZFW controller made several attempts to contact the pilot, but there were no further transmissions from the pilot.

Radar data showed that about 1506, the airplane made a right 180° turn to the south. The airplane

descended through 3,370 ft. msl. About 2 minutes later, the airplane made a left 270° turn and rolled out on a westerly heading. At the last radar contact, the airplane was about 5 miles southeast of Colbert, at 700 ft. msl. The terrain elevation in the area was about 660 ft. msl.

Pilot Information

Certificate:	Private	Age:	64, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	Glider	Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 Waiver time limited special	Last FAA Medical Exam:	April 14, 2015
Occupational Pilot:	No	Last Flight Review or Equivalent:	May 14, 2015
Flight Time:	(Estimated) 1491 hours (Total, all aircraft), 1460 hours (Total, this make and model), 21.8 hours (Last 30 days, all aircraft)		

Passenger Information

Certificate:		Age:	64
Airplane Rating(s):		Seat Occupied:	Rear
Other Aircraft Rating(s):		Restraint Used:	Unknown
Instrument Rating(s):		Second Pilot Present:	No
Instructor Rating(s):		Toxicology Performed:	No
Medical Certification:		Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:			

The pilot held a private pilot certificate with single-engine land airplane and instrument ratings. On April 14, 2015, he received a special issuance third-class medical certificate limited by a requirement for corrective lenses and marked, "not valid for any class after 04/30/2016."

The pilot's logbook showed that he had flown 1,491.0 total hours, 21.9 hours of which were in the 30 days before the accident. The logbook also showed that the pilot successfully completed a flight review and instrument proficiency check in the accident airplane make and model on May 14, 2015.

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N252G
Model/Series:	V35B B	Aircraft Category:	Airplane
Year of Manufacture:	1979	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	D-10266
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	January 15, 2015 100 hour	Certified Max Gross Wt.:	3412 lbs
Time Since Last Inspection:	45 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	3886 Hrs as of last inspection	Engine Manufacturer:	Continental
ELT:		Engine Model/Series:	IO-520-BB
Registered Owner:		Rated Power:	285 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

The four-place, single-engine, V-tail airplane, serial number D-10266, was registered to a corporation and used by the pilot for both business and pleasure. It was equipped with two 40-gallon fuel tanks and powered by a 285 horsepower Continental Motors IO-520-BB engine, serial number 836904-R.

A review of the airframe and engine records revealed that the airplane had undergone a 100-hour inspection on January 14, 2015, at an airframe time of 3,841.4 hours.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KDUA, 698 ft msl	Distance from Accident Site:	9 Nautical Miles
Observation Time:	19:55 Local	Direction from Accident Site:	23°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	7 knots /	Turbulence Type Forecast/Actual:	/ None
Wind Direction:	190°	Turbulence Severity Forecast/Actual:	/ N/A
Altimeter Setting:	29.93 inches Hg	Temperature/Dew Point:	36°C / 19°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	JACKSON, MI (JXN)	Type of Flight Plan Filed:	IFR
Destination:	FORT WORTH, TX (FWS)	Type of Clearance:	IFR
Departure Time:	10:00 Local	Type of Airspace:	Class G

At 1155, the automated weather observation station at DUA, located 9 nautical miles north-northeast of the accident site recorded wind 190°; at 7 knots, visibility 10 miles, clear skies, temperature 36°; C, dew point 19°; C, and altimeter setting 29.93 inches of

mercury.

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:	33.801387,-96.465835(est)

The accident site was located in a wooded area along the east side of a road about 5 miles southeast of Colbert. The site was surrounded by fields suitable for a forced landing. The airplane came to rest upright and was oriented on a south-south westerly heading. The airplane initially impacted some pine trees about 100 ft. east-northeast of the wreckage. Several tree branches in the immediate vicinity of the airplane were broken and showed marks consistent with impact marks on the airplane's wings and fuselage. The debris path was on a bearing of about 200° from the initial tree impact. About 40 ft. east of the airplane was an impact crater that measured about 25 ft. wide and 20 ft. long. Airplane debris and dirt fanned out from the crater toward the airplane wreckage.

Within the debris field were pieces from the engine cowling, forward fuselage, windscreen, and fuel system. Also within the debris field were luggage and broken branches.

The main wreckage consisted of the cabin, fuselage, engine, propeller, left and right wings, and empennage. (See Figure 1 for a photograph showing the accident site and main wreckage.)



Figure 1. A photograph showing the accident site and main wreckage.

The cowling, engine, and engine mounts were broken downward and twisted right 15° . The nose gear was in the retracted position. The nose gear wheel well and nose gear doors were crushed upward. The front cabin floor and front seats were broken downward and canted right about 10° . The instrument panel, control yoke and glareshield were broken forward and down. The front windscreen was broken out and fragmented. The rear cabin, baggage compartment and aft fuselage showed upward crushing. The empennage showed minor damage.

The propeller remained attached to the engine crankshaft flange. The spinner was dented inward. Two of the three propeller blades were intact and undamaged. The third propeller blade was bent aft about 45° and located under the lower engine cowling, and showed no leading edge gouges or chordwise scratches.

The airplane's left wing was intact. The forward leading edge showed dents and fractures along its entire span. The left main fuel tank remained intact and 32 gallons of fuel were recovered from it. The left main landing gear was in the retracted position and the gear doors were crushed upward. The left flap and aileron were intact.

The airplane's right wing was broken aft longitudinally at mid-span. The right fuel tank was broken open. The smell of fuel was prevalent. The right main landing gear was in the retracted position and the gear doors were crushed upward. The right flap was in the retracted position and showed minor damage. The right outboard wing section and right aileron were located immediately right of the inboard section. The wing section was broken upward and crushed aft. The leading edge showed impact marks consistent with striking trees. Tree debris was found in several of the dents and skin tears. The right aileron was broken out and bent in several locations along its span. Flight control continuity was confirmed from the cockpit to the left and right ailerons and the V-tail stabilizers.

An examination of the engine revealed no anomalies. An examination of the fuel system showed the fuel selector valve handle positioned between the left and right tank positions. Fuel selector continuity was established for each detent by blowing air through the valve. No air flowed through the valve when the fuel selector was in the intermediate position between the left and right tanks. No other anomalies were found with the airplane.

A J. P. Instruments EDM-700 engine data monitor, Garmin Aera 560 GPS, and a Horizon Instruments P1000 tachometer were retained and sent to the NTSB Vehicle Recorders Laboratory for examination.

Additional Information

The Raytheon Beech Hawker Pilot's Operating Handbook (POH) for the model V35B airplane provides emergency procedures in the event of an engine failure after takeoff or while in flight. The first item in the emergency procedure states, "Fuel Selector Valve – SELECT OTHER TANK (Check to feel detent)."

Additionally, the POH provides an emergency checklist for maximum glide configuration that states that with the landing gear and flaps retracted, cowl flaps closed, propeller at low rpm, and maintaining an airspeed of 105 kts, the airplane's glide distance is approximately 1.7 nm per 1,000 ft. of altitude above the terrain.

An after-market laminated checklist found in the airplane wreckage, under ENGINE FAILURE INFLIGHT, showed the fourth item as "FUEL SELECTOR ... FULLEST TANK/OTHER."

Medical and Pathological Information

The Board of Medicolegal Investigations, Office of the Chief Medical Examiner, Oklahoma City, Oklahoma, conducted an autopsy of the pilot. The pilot's death was attributed to "multiple blunt force

injuries." In addition, significant heart disease was identified that included atherosclerosis of the coronary arteries. The posterior descending coronary artery was found to have about 90% stenosis, and the left main, left anterior descending, and right coronary arteries had about 25% stenosis.

The FAA Bioaeronautical Sciences Research laboratory conducted toxicology testing on the pilot's specimens. The tests detected rosuvastatin in the pilot's urine but not in his blood. Rosuvastatin is a prescription medication in the class of medications called statin antilipemic agents. It is used to reduce blood cholesterol and triglyceride levels, and it is not impairing.

Tests and Research

Electronic Devices

The Horizon Instruments P1000 tachometer was capable of displaying engine rpm and storing tachometer time to non-volatile memory. The unit powered on normally and a tachometer time of 3,886 hours was observed.

Data extracted from the Garmin Aera 560 GPS produced 37 logs from January 22, 2014, through July 28, 2015. Two logs associated with the day of the accident were identified by recorded date and time; the first starting at 0809:50 CDT and ending at 1226:02 CDT, and the second starting at 1318:52 and ending at 1507:47 CDT.

Engine performance data was extracted from the J. P. Instruments EDM-700 engine data monitor memory chips. Engine parameters monitored and recorded by the unit included: exhaust gas temperature (EGT), cylinder head temperature (CHT), fuel flow, fuel used, and voltage.

The EDM recorded about 11,375 data points over 11 flight logs. Two logs associated with the day of the accident were identified by recorded date and time; the first starting at 0816:02 and ending at 1234:34, and the second starting at 1315:49 and ending at 1513:30. The data points were recorded every 6 seconds.

A noticeable drop in EGT and CHT for all 6 cylinders occurred 9 minutes before the last recorded data point. The EGTs dropped from about 1,500°F to 400°F, and then to about 100°F. The CHTs dropped from about 380°F to about 115°F.

Administrative Information

Investigator In Charge (IIC):	Liedler, Courtney
Additional Participating Persons:	Rocky Patel; Federal Aviation Administration; Oklahoma City, OK Peter Basile; Textron Aviation; Wichita, KS Mike Council; Continental Motors; Mobile, AL
Original Publish Date:	July 12, 2017
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=91631

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).