Aviation Investigation Final Report

Location:	Kingston, Tennessee	**Accident Number:**	ERA16LA090
Date & Time:	January 16, 2016, 11:10 Local	**Registration:**	N3680Q
Aircraft:	Beech A23	**Aircraft Damage:**	Substantial
Defining Event:	Fuel starvation	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot performed maintenance on the airplane about 2 weeks before the accident, which included replacing the fuel tank cap O-rings and draining the fuel from the left tank and putting it in the right fuel tank in order to clear debris from the left tank sump valve. Following that work, the pilot believed that the airplane's right fuel tank contained about 28 gallons of fuel and the left fuel tank contained about 1.5 gallons. On the morning of the accident flight, he performed a preflight inspection of the airplane but could not recall if he visually verified the fuel quantity in each tank. After flying around the local area for about an hour with the fuel selector positioned to the right fuel tank, the engine experienced a total loss of power. The pilot performed a forced landing, during which the airplane was substantially damaged.

The pilot reported that he kept the fuel selector positioned to the right fuel tank for the entirety of the flight and did not select the left fuel tank after the loss of engine power because he believed it only contained 1.5 gallons of fuel. Examination of the airplane after the accident revealed that the fuel selector was in the right fuel tank position, both fuel tanks were intact, and the right fuel tank was empty. The left tank contained about 7 gallons of fuel. A cursory postaccident examination of the engine found no evidence of any mechanical deficiencies. Given that the pilot used the right fuel tank for the entirety of the flight and that the right fuel tank was found intact and empty after the accident, it is likely that the loss of engine power was the result of fuel starvation.

Probable Cause and Findings

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

The pilot's inadequate preflight inspection and fuel planning and his improper in-flight fuel management, which resulted in a total loss of engine power due to fuel starvation.

Findings

Aircraft	Fuel - Fluid management
Personnel issues	Preflight inspection - Pilot
Personnel issues	Fuel planning - Pilot

Factual Information

History of Flight

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

On January 16, 2016, at 1110 central standard time, a Beech A23, N3680Q, was substantially damaged during a forced landing near the Riley Creek Airport (12TN), Kingston, Tennessee. The private pilot was not injured. The airplane was privately owned and operated under the provisions of 14 *Code of Federal Regulations* Part 91 as a personal flight. Visual meteorological conditions were reported near the accident site about the time of the accident, and no flight plan was filed. The flight originated from the 12TN at 1015.

According to the pilot, two weeks prior to the accident, he replaced the O-rings on the fuel caps and drained all of the fuel out of the left fuel tank in order to clear any debris from the left wing sump valve. He then poured all of the drained fuel into the right wing tank, which brought the right fuel quantity to approximately 28 gallons. He then poured the remaining fuel, which was approximately 1.5 gallons, into the left fuel tank and then sampled the fuel from both tanks for water and other contamination. He then tied down the airplane and placed a tarp over it.

On the day of the accident, the pilot returned to the airport and did not recall if he verified the fuel levels prior to his flight. He climbed into the cockpit and conducted a preflight inspection prior to starting the engine. Once the engine was started, he taxied around the ramp area to clean the mud and debris from the tires while warming up the engine. He took off and flew around for approximately 45 minutes before returning to the airport. After landing he taxied around the airport a few more times before departing again. He said that he was flying for about 10 minutes when he decided to return to the airport. As he flew over the airport to see the direction of the wind, the engine stopped. He attempted to troubleshoot the situation and made an unsuccessful attempt to restart the engine but did not move the fuel selector from the right fuel tank for the left fuel tank as he believed it only contained 1 to 1.5 gallons of fuel. The pilot performed an emergency off-field landing.

Initial examination of the airplane by a Federal Aviation Administration inspector revealed that the airplane's left wing was broken away from the wing root. The empennage separated from the main cabin and the firewall was buckled. During the examination of the airplane it was noted that the fuel tanks were not breached. Further inspection revealed that the fuel selector was on the right fuel tank. The right fuel tank did not contain any fuel. Examination of the left fuel tank reveal that it had approximately 7 gallons of fuel after draining. A cursory examination was conducted on the engine and valve train continuity was established. The magnetos were checked, and they produced spark to all the spark plugs. Fuel flow was confirmed to the fuel flow divider and fuel injectors. An engine run was attempted but was unsuccessful. During a telephone call with the FAA inspector, the pilot mentioned that he felt that the fuel may have been stolen out of his airplane prior to the accident.

Pilot Information

Certificate:	Private	**Age:**	51,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	December 19, 2015
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	December 5, 2015
Flight Time:	(Estimated) 115.1 hours (Total, all aircraft), 6.5 hours (Total, this make and model), 73.9 hours (Pilot In Command, all aircraft), 6.5 hours (Last 90 days, all aircraft), 5.1 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N3680Q
Model/Series:	A23 A	**Aircraft Category:**	Airplane
Year of Manufacture:	1967	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	M-1052
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	October 17, 2015 Annual	**Certified Max Gross Wt.:**	2385 lbs
Time Since Last Inspection:	5 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1482 Hrs at time of accident	**Engine Manufacturer:**	CONT MOTOR
ELT:	C91A installed, not activated	**Engine Model/Series:**	IO-346 SERIES
Registered Owner:	On file	**Rated Power:**	165 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Not reported
Observation Facility, Elevation:	MMI,874 ft msl	**Distance from Accident Site:**	25 Nautical Miles
Observation Time:	15:15 Local	**Direction from Accident Site:**	3°
Lowest Cloud Condition:	Unknown	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 3100 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	280°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	29.89 inches Hg	**Temperature/Dew Point:**	4°C / 1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Kingston, TN (12TN)	**Type of Flight Plan Filed:**	None
Destination:	Kingston, TN (12TN)	**Type of Clearance:**	None
Departure Time:	10:15 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Riley Creek 12TN	**Runway Surface Type:**	
Airport Elevation:	750 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	35.823612,-84.538887(est)

Administrative Information

Investigator In Charge (IIC):	Alleyne, Eric
Additional Participating Persons:	Gabriel Henkel; FAA/FSDO; Nashville, TN
Original Publish Date:	July 16, 2018
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=92580