Aviation Investigation Final Report

Location:	Lecanto, Florida	**Accident Number:**	ERA18TA203
Date & Time:	July 26, 2018, 17:55 Local	**Registration:**	N717X
Aircraft:	Beech C90	**Aircraft Damage:**	Substantial
Defining Event:	Fuel starvation	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The commercial pilot reported that, before a short, cross-country, personal flight, he purchased 40 gallons of fuel; 20 gallons of fuel were added to each wing tank. The pilot estimated that, at the time of departure, the airplane had a total fuel load of about 130 gallons with 65 gallons in each wing tank. About 10 minutes after departure, the left engine's power surged. The pilot attempted to divert to a nearby airport, but the left engine lost all power during the approach, followed by the right engine losing all power. The pilot was not sure if the airplane could glide to the runway, so he chose to perform a forced landing to a field. During the landing roll, the right wing impacted a tree and was substantially damaged.

The airplane was equipped with six fuel tanks; two interconnected tanks in each wing and one tank in each engine's nacelle. On each side of the airplane, fuel flowed from the respective wing tanks to the nacelle tank and then to the engine. Fuel would gravity feed from the wing tanks to the nacelle tanks; however, gravity feed did not work once each wing tank was depleted to about 28 gallons or below. At that point, the fuel transfer pumps (one for each wing/nacelle) must be on to keep the fuel moving to the nacelle tanks and ultimately the engines.

Examination of the wreckage revealed that the fuel transfer pumps were in the "off" position. No fuel was found in the nacelle tanks, and about 30 gallons of fuel were found in each wing tank. When the battery and fuel transfer pumps were turned on, fuel began to flow from each wing tank to its respective nacelle tank. Turning on the fuel transfer pumps is an After Starting and Taxi checklist item; therefore, it is unlikely that the pilot followed the checklist and that he forgot to turn the fuel transfer pumps on, which resulted in fuel starvation to both engines and their subsequent loss of power.

Probable Cause and Findings

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

The pilot's failure to turn on the fuel transfer pumps in accordance with the published checklists, which resulted in a dual loss of engine power due to fuel starvation.

Findings

Aircraft	Fuel pumps - Not used/operated
Personnel issues	Forgotten action/omission - Pilot
Personnel issues	Use of checklist - Pilot

Factual Information

History of Flight

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

On July 26, 2018, about 1755 eastern daylight time, a Beech C90, N717X, was substantially damaged during a forced landing to a field, following a total loss of power on both engines near Lecanto, Florida. The commercial pilot was not injured. The airplane was registered to and operated by LILSA KA LLC as a personal flight conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91. Visual meteorological conditions prevailed and no flight plan was filed for the planned flight to Williston Municipal Airport (X60), Williston, Florida. The flight departed Brooksville-Tampa Bay Regional Airport (BKV), Brooksville, Florida, about 1740.

The pilot reported that earlier during the day of the accident, he flew uneventfully from X60 to BKV to have some maintenance work performed on the brakes. While at BKV, he purchased 40 gallons of fuel, 20 gallons were added to each wing. The pilot estimated that at the time of departure, the airplane had a total fuel load of 870 lbs. (about 130 gallons total, 65 gallons per side). The pilot then waited for some convective weather to subside and departed on a return flight to X60. Due to some scattered thunderstorms remaining in the area, the pilot flew west and then followed the coast north. While flying over Crystal River Airport (CGC), Crystal River, Florida, the engine power surged on the left engine. The pilot diverted toward CGC and was flying a wide right downwind traffic pattern for runway 27 while trying to troubleshoot the engine anomaly. As he turned the airplane onto the right base leg of the traffic pattern, the left engine lost all power; then when he subsequently turned onto the final approach leg of the traffic pattern, the right engine lost all power. The pilot was not sure if the airplane would glide to the runway and elected to perform a forced landing to a field. During the landing roll, the right wing impacted a tree.

Review of an airplane flight manual revealed that the airplane was equipped with six fuel tanks; two interconnected tanks in each wing and one tank in each engine nacelle. Fuel flowed from the respective wing tanks, to the nacelle tank, to the engine. Fuel would gravity feed from the wing tanks to nacelle tank; however, the gravity feed does not work once the wing tanks are depleted to about 28 gallons (total per each wing) or below. At that point, the fuel transfer pumps (one for each wing/nacelle) must be on to keep fuel moving to the nacelle tanks and ultimately the engines. Review of the after starting and taxi checklist revealed instructions to turn the fuel transfer pumps on.

Examination of the wreckage by a Federal Aviation Administration inspector revealed that the airplane came to rest upright in a field about 4 miles east of CGC. The right wing sustained substantial damage and the rest of the airplane remained undamaged. A local mechanic inspected the wreckage at the scene for the purposes of providing a repair estimate. During the inspection, the mechanic noted that the fuel transfer pumps were in the off position. He also observed no fuel in the nacelle tanks and about 30

gallons of fuel in each wing. The mechanic then turned on the battery and fuel transfer pumps. At that point, fuel began to flow from each wing tank to the respective nacelle tank.

Pilot Information

Certificate:	Commercial	**Age:**	27,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	July 1, 2017
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	January 20, 2016
Flight Time:	1620 hours (Total, all aircraft), 172 hours (Total, this make and model), 1555 hours (Pilot In Command, all aircraft), 55 hours (Last 90 days, all aircraft), 13 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N717X
Model/Series:	C90 UNDESIGNAT	**Aircraft Category:**	Airplane
Year of Manufacture:	1973	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	LJ-581
Landing Gear Type:	Retractable - Tricycle	**Seats:**	8
Date/Type of Last Inspection:	September 11, 2017 Annual	**Certified Max Gross Wt.:**	10100 lbs
Time Since Last Inspection:	172 Hrs	**Engines:**	2 Turbo prop
Airframe Total Time:	8287 Hrs at time of accident	**Engine Manufacturer:**	Walter
ELT:	C91 installed, not activated	**Engine Model/Series:**	M601E-115
Registered Owner:	Lilsa Ka Llc	**Rated Power:**	751 Horsepower
Operator:	Lilsa Ka Llc	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	CGC,9 ft msl	**Distance from Accident Site:**	4 Nautical Miles
Observation Time:	17:55 Local	**Direction from Accident Site:**	260°
Lowest Cloud Condition:	Scattered / 2000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	240°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.97 inches Hg	**Temperature/Dew Point:**	30°C / 25°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Brooksville, FL (BKV)	**Type of Flight Plan Filed:**	None
Destination:	Williston, FL (X60)	**Type of Clearance:**	None
Departure Time:	17:40 Local	**Type of Airspace:**	

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:**	28.878889,-82.49472(est)

Administrative Information

Investigator In Charge (IIC):	Gretz, Robert
Additional Participating Persons:	Robert Blake; FAA/FSDO; Tampa, FL
Original Publish Date:	November 6, 2019
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=97910