Aviation Investigation Final Report

Location:	Houston, Texas	**Accident Number:**	DFW07LA016
Date & Time:	October 26, 2006, 17:50 Local	**Registration:**	N1096W
Aircraft:	Beech F33	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

Prior to the 2,174-hour commercial pilot return flight to his home airport, the airplane was serviced with 54 gallons of fuel, for a total of 74 gallons of fuel on board. A review of the flight manifest for October 25 had the airplane airborne for 2 hours and 18 minutes, with the take-off at 1740 and landing Houston at 1958. The airplane was equipped with two 40-gallon wing fuel tanks, with 37 gallons useable. Additionally, the operator planned for an 18-gallons/hour fuel burn during cruise flight, and 22-gallons/hour in a climb. On October 26, the pilot departed approximately 16:40 for a 221 nautical mile flight. During the flight, the pilot decided to return to the airport due to "bad" weather and moderate to heavy turbulence. Approximately 40 minutes after departure, the "engine quit"; the pilot ran the checklist, which including switching fuel tanks (from the right to the left tank), turning on the [electric] fuel pump, applying full rich mixture and turning the magnetos; left, right and to both. The engine did not restart and the pilot elected to land in a field. During the forced landing the airplane's nose gear collapsed and the came to rest with the nose down. The pilot reported that after the landing he looked in each fuel tank and observed, " sufficient quantities of fuel." The following morning, with the airplane still tipped up on it's nose an FAA inspector observed that the left fuel tank was empty and the right tank had "about an inch" of fuel in the tank. During the airplane salvage retrieval, recovery personnel reported they drained 21 gallons of fuel from the right fuel tank and that the left tank contained approximately 1 quart of fuel. Environmental personnel reported that "no sheen or soil staining" was observed in the area of the crash and no fuel was spilled in the airplane recovery. The pilot reported to the NTSB IIC, that he visually checked the fuel level, and both tanks were at the three-quarter full level prior to the flight; on the NTSB form 6120.1 (Pilot/Operator Aircraft Accident Report) he reported that he had 46 gallons of fuel on board and that he used approximately 1 gallon of fuel before departure. The airplane was transported to a salvage yard and an airplane examination was conducted. The fuel lines and vents were clear and unobstructed. The two wing drain ports were undamaged with no evidence of any leakage. Both wing fuel tanks were not breached in the accident sequence. The engine's fuel servo fuel-screen was removed and was in good condition and absent of any

debris. Other than a bent propeller, the engine did not appear to have sustained any impact damage during the accident. The engine was fitted with a test propeller and a fuel container was attached to the fuel line on the left side of the airplane. The engine's oil was checked and read as 11 quarts on the dipstick. The airplane's electric fuel pump operated and was used to prime the engine. The engine was then started and run for approximately 5 minutes. The engine was then shutdown and the fuel container was switched and connected to the right side fuel line. Again, the engine was started and run for approximately 5 minutes. During the engine runs, the engine was run to full power, the oil pressure was normal, and the left-right magneto drop was between 50-60 rpm. No abnormalities were found with the engine operation.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of engine power due to fuel starvation as a result of the pilot's improper fuel management.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: CRUISE

Findings
1. (C) FLUID,FUEL - STARVATION
2. (C) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: EMERGENCY LANDING

Findings
3. TERRAIN CONDITION - NONE SUITABLE

Factual Information

HISTORY OF FLIGHT

On October 26, 2006, approximately 1750 central daylight time, a single-engine Beech F33 airplane, N1096W, was substantially damaged during a forced landing following a loss of engine power during cruise flight near Houston, Texas. The commercial pilot, the sole occupant, was not injured. The airplane was registered to and operated by GTA Air Incorporated, Lancaster, Texas. Night instrument meteorological conditions prevailed and an instrument flight rules flight plan was filed for the 14 Code of Federal Regulations Part 135 cross-country flight. The flight originated from the William P Hobby Airport (HOU), near Houston, Texas, about 1715, and was destined for the Baton Rouge Metropolitan Airport, Ryan Field (BTR), near Baton Rouge, Louisiana.

According to the pilot, the flight was a daily scheduled flight between Houston and Baton Rouge. Additionally, the airplane was normally serviced with fuel at Baton Rouge before it returned to Houston. On October 25 before returning to Houston, the airplane was serviced with 54 gallons of fuel, for a total of 74 gallons of fuel on board. A review of the flight manifest for October 25 had the airplane airborne for 2 hours and 18 minutes, with the take-off at 1740 and landing Houston at 1958.

On October 26, the pilot departed Houston approximately 16:40 for the 221 nautical mile flight. During the flight the pilot decided to return to Houston due to "bad" weather and moderate-to-heavy turbulence. Approximately 40 minutes after departure the pilot stated, "the engine quit." He used the checklist, which included switching fuel tanks (from the right to left tank), turning on the [electric] fuel pump, applying full rich mixture and turning the magnetos; left, right and to both. Then engine did not restart and the pilot elected to land in a field that had standing water in it. During the forced landing the airplane's nose gear collapsed and the came to rest with the nose down. The pilot reported that after the landing he looked in each fuel tank and observed, "sufficient quantities of fuel."

The pilot reported to the NTSB investigator-in-charge (IIC), that he visually checked the fuel level prior to departure, and both tanks were at the three-quarter-full level. On the NTSB form 6120.1 (Pilot/Operator Aircraft Accident Report), he reported 46 gallons of fuel on board and that he used approximately 1 gallon of fuel before departure.

AIRCRAFT INFORMATION

The airplane had two 40-gallon wing fuel tanks, of which 37-gallons were useable. Additionally, the aircraft was equipped with a Continental IO-520 engine that the pilot planned for an 18-gallons/hour fuel burn during cruise flight, and 22-gallons/hour in a climb. Additionally, the

operator reported that they had an approved 400-hour TBO (Time Before Overhaul) extension on the engine.

WRECKAGE AND IMPACT INFORMATION

A Federal Aviation Administration (FAA) inspector, who responded to the accident site the following morning, reported that the airplane received structural damage during the forced landing. With the airplane still tipped up on it's nose due to the landing, the FAA Inspector observed that the left fuel tank was empty and the right tank had "about an inch" of fuel in the tank. During the airplane salvage retrieval, recovery personnel reported they drained 21 gallons of fuel from the right fuel tank and that the left tank contained approximately 1 quart of fuel.

At the request of the landowners, an environmental contract company was hired to access the impact of the airplane-landing site. The company reported that "no sheen or soil staining" was observed in the area of the crash and no fuel was spilled in the airplane recovery.

The airplane was transported to a salvage yard and the NTSB Investigator In Charge (IIC) conducted an airplane examination on December 6, 2006. Approximately six feet of the leading edge of the right wing and three feet of the left was crushed inward. The outer section of the left wing spar was also bent. Additionally, the aft section of the fuselage was deformed including the control surfaces of the empennage. The fuel lines and vents were clear and unobstructed. The two wing drain ports were undamaged with no evidence of any leakage. Both wing fuel tanks were not breached in the accident sequence. The engine's fuel servo fuel-screen was removed and was in good condition and absent of any debris. Other than a bent propeller, the engine did not appear to have sustained any impact damage during the accident. The engine was fitted with a test propeller and a fuel container was attached to the fuel line on the left side of the airplane. The engine's oil was checked and read as 11 quarts on the dipstick. The airplane's electric fuel pump operated and was used to prime the engine. The engine was then started and run for approximately 5 minutes. The engine was then shutdown and the fuel container was switched and connected to the right side fuel line. Again, the engine was started and run for approximately 5 minutes. During the engine runs, the engine was run to full power, the oil pressure was normal, and the left-right magneto drop was between 50-60 rpm. No abnormalities were found with the engine operation.

PERSONNEL INFORMATION

The 2,174-hour commercial pilot held ratings for airplane single-engine land and multi-engine land. He also held a flight instructor certificate for airplane single-engine. The pilot reported he had 232-hours in this make and model. The pilot's most recent FAA second-class medical certificate was issued August 2006 with the restriction for corrective lenses.

METEOROLOGICAL INFORMATION

At 1753, the automated weather observing system at Houston, approximately 10 miles

northeast of the accident site, reported wind at 200 degrees at 9 knots, 10 miles visibility, scattered clouds at 2300 feet, a broken cloud ceiling at 4,000 feet and 13,000 feet, temperature 82 degrees Fahrenheit, dew point 74 degrees Fahrenheit, and an altimeter setting of 29.79 inches of Mercury.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	45,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Front
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:**	August 1, 2006
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	July 1, 2006
Flight Time:	2174 hours (Total, all aircraft), 232 hours (Total, this make and model), 2067 hours (Pilot In Command, all aircraft), 256 hours (Last 90 days, all aircraft), 88 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N1096W
Model/Series:	F33	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	CE-436
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	October 1, 2006 100 hour	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	18305 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-520
Registered Owner:	GTA Air Inc	**Rated Power:**	300 Horsepower
Operator:		**Operating Certificate(s) Held:**	On-demand air taxi (135)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	HOU	**Distance from Accident Site:**	
Observation Time:	17:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Scattered / 2300 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 4000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	200°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.79 inches Hg	**Temperature/Dew Point:**	28°C / 23°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	HOUSTON, TX (HOU)	**Type of Flight Plan Filed:**	IFR
Destination:	BATON ROUGE, LA (BTR)	**Type of Clearance:**	IFR
Departure Time:		**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:**	29.647222,-95.286109

Administrative Information

Investigator In Charge (IIC):	Hatch, Craig
Additional Participating Persons:	Louis F Ebersole; FAA FSDO; Houston, TX
Original Publish Date:	March 26, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=64782