Aviation Investigation Final Report

Location:	Wimberley, Texas	**Accident Number:**	DFW07LA009
Date & Time:	October 21, 2006, 11:50 Local	**Registration:**	N2426N
Aircraft:	Piper PA-38-112	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The 201-hour private pilot departed at about 11:15 on a local cross-country flight with 6 quarts of oil in the engine and 12 gallons of fuel on board. After takeoff, he climbed to 2,500 with the electric boost pump on. Later, during cruise flight the "engine powered back" and the pilot tried to reapply full power to the engine by "checking the fuses and [fuel] primer, as well as, turning on the electric fuel pump and turning to the left fuel tank." The engine did not respond and the pilot elected to execute a forced landing in a field. During a telephone conversation with the NTSB IIC, the pilot stated that the engine "sputtered out" and "then came back, sputtering again" before "quitting completely." During the recovery of the airplane, recovery personnel reported draining 7 gallons of fuel from the right fuel tank and that the left tank was empty. An engine inspection was conducted on November 15, 2006. The engine sustained minimum impact damage during the accident sequence. The engine was rotated by hand; continuity through the engine's valve train and compression on each cylinder was established. The bracket air filter was in place, and appeared in good condition and free of obstructions. The airplane's electrical system was turned on and the electric fuel boost pump was switched on; the electric pump appeared to operate normally. Approximately two tablespoons of fuel was drained from the carburetor. The gascolator was opened and found to be dry and clear, the screen at the top of the gascolator was in-place and free of any debris. The engine was examined and no mechanical anomalies were noted. The airplane's information manual states under Fuel Limitations: "... The unusable fuel for this airplane has been determined as 1.0 gallon in each wing in critical flight attitudes." Additionally, the manual states that fuel consumption during cruise flight would be 6.5 gallons/hour (75%, Best Power setting).

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's inadequate pre-flight planning which resulted in fuel starvation and the subsequent the loss of engine power. A contributing factor was the lack of suitable terrain for the forced landing.

Findings

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

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

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

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: EMERGENCY LANDING

Findings
3. TERRAIN CONDITION - DITCH
4. (F) TERRAIN CONDITION - NONE SUITABLE

Factual Information

On October 21, 2006, approximately 1150 central daylight time, a single-engine Piper PA-38-112 airplane, N2426N, was substantially damaged during a forced landing following a loss of engine power during cruise flight near Wimberley, Texas. The private pilot and his passenger were not injured. The airplane was registered to and operated by a private individual. Visual meteorological conditions prevailed and a flight plan was not filed for the 14 Code of Federal Regulations Part 91 personal flight. The cross-country flight originated from the Rusty Allen Airport (5R3), near Lago Vista, Texas, and was destined for the New Braunfels Municipal Airport (BAZ), near New Braunfels, Texas.

The 201-hour private pilot reported in the Pilot/Operator Aircraft Accident Report (NTSB Form 6120.1/2) that he preformed a preflight inspection of the airplane and found "no mechanical irregularities." During the inspection the pilot noted that the oil level was at 6 quarts and the fuel level was at 14 gallons. The pilot further stated that at departure, about 11:15, he had 12 gallons of fuel on board. He then climbed to 2,500 feet with the electric boost pump in the "on" position. A few seconds later, while at cruise flight, the "engine powered back," and the pilot reported that he tried to reapply full power to the engine by checking the fuses and the [fuel] primer, as well as tuning "on" the electric fuel pump and selecting the left fuel tank position. The engine did not respond and the pilot elected to land in a field.

During the forced landing the airplane crossed a dirt road and slid into a ditch, coming to rest in an upright position. During a telephone conversation with the NTSB Investigator-in-charge (IIC), the pilot stated that the engine "sputtered out" and "then came back, sputtering again", before "quitting completely."

According to a Federal Aviation Administration (FAA) inspector, who responded to the accident site, the aircraft received structural damage during the forced landing. The inspector also noted that the airplane's left wing fuel tank appeared empty, and the right wing tank contained a "little" fuel. During the airplane salvage retrieval, recovery personnel reported they drained 7 gallons of fuel from the right fuel tank and that the left tank was empty.

An engine examination was conducted on November 15, 2006. The engine sustained minimum impact damage during the accident. The engine was rotated by hand; continuity through the engine's valve train and compression on each cylinder was established. The bracket air filter (part number 4106) was in place, and appeared in good condition and free of obstructions. The airplane's electrical system was turned on and the electric fuel boost pump was switched on; the electric pump appeared to operate normally. Approximately two tablespoons of fuel was drained from the carburetor bowl. The gascolator was opened and found to be dry and clear, the screen at the top of the gascolator was in-place and free of any debris. The left magneto was timed at 24 degrees and the right magneto was timed at 20

degrees. The magnetos were rotated by hand and each magneto produced a spark at all terminals. Additionally, the right magneto's castle nut was found threaded approximately halfway on, and missing its cotter pin. The top sparkplugs were removed and appeared normal, and had light gray deposits in the electrode area. The amount of engine oil remaining in the engine could not be determined since the oil level was below the end of the oil dipstick.

An engine run was conducted on December 29, 2006 under the supervision of the NTSB IIC. Due to damage sustained during the accident sequence, a fuel line was connected directly to the engine-driven fuel pump from a fuel container. Additionally, the mixture control arm was bent and wired to the full rich position and metal stiffeners were added to strengthen the damaged engine mount. The magnetos were reinstalled and timed, and four quarts of oil was added to the engine. The engine was started and ran rough. After the engine was shutdown, the number three cylinder was found to be "cold." Both ignition leads to the number three cylinder were found to contain cuts in the wire as result of the accident. The ignition lead from the right magneto was replaced. Before the engine was run again, a compression check was preformed and all four cylinders showed normal compression. During the second engine run, the engine was run at various power settings including full power. The engine ran for approximately 10 minutes with no abnormalities noted.

Piper's PA-38-112 pilot manual states under Fuel Limitations: "...The unusable fuel for this airplane has been determined as 1.0 gallon in each wing in critical flight attitudes." Additionally, the manual states that fuel consumption during cruise flight should be 6.5 gallons/hour (75%, Best Power setting).

At 1155, the automated weather observing system at HYI, approximately 10 miles southeast of the accident site, reported wind from 230 degrees at 6 knots, 10 miles visibility, scattered clouds at 4,000 feet, temperature 75 degrees Fahrenheit, dew point 63 degrees Fahrenheit, and an altimeter setting of 29.89 inches of Mercury.

Pilot Information

Certificate:	Private	**Age:**	25,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	January 1, 2004
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	201 hours (Total, all aircraft), 20 hours (Total, this make and model), 201 hours (Pilot In Command, all aircraft), 56 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N2426N
Model/Series:	PA-38-112	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	38-79A0837
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	January 1, 2006 Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	7602 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-235
Registered Owner:	On file	**Rated Power:**	118 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KHYI	**Distance from Accident Site:**	10 Nautical Miles
Observation Time:	11:55 Local	**Direction from Accident Site:**	145°
Lowest Cloud Condition:	Scattered / 4000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	230°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.88 inches Hg	**Temperature/Dew Point:**	24°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	LAGO VISTA, TX (5R3)	**Type of Flight Plan Filed:**	None
Destination:	Wimberley, TX	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	29.993055,-98.043609

Administrative Information

Investigator In Charge (IIC):	Hatch, Craig
Additional Participating Persons:	Harry Kifer; FAA, FSDO; San Antonio, TX
Original Publish Date:	March 26, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=64741