Aviation Investigation Final Report

Location:	Bolivar, Missouri	**Accident Number:**	CHI05LA069
Date & Time:	February 10, 2005, 19:40 Local	**Registration:**	N5961P
Aircraft:	Piper PA-24-250	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	3 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane contacted trees and terrain on final approach to land following a loss of engine power due to fuel exhaustion. The pilot reported he topped the airplane off prior to departure for the cross country flight. He stated he flew at 8,500 feet with a power setting of 2,400 rpm and 22" of manifold pressure. The pilot stated he leaned the mixture by pulling it back until the engine ran rough, then he increased the mixture until it ran smooth again. The pilot reported he became concerned about the amount of fuel on board when he noticed the "fuel gage drop" while en route. He contacted a nearby airport and inquired about obtaining fuel. The airport manager stated they did not have fuel services, but recommended another nearby airport for fuel. He reported the fuel in one of his fuel tanks was exhausted when he was about half way to the alternate airport and the other fuel tank was exhausted when he was in the traffic pattern to land. The pilot stated he miscalculated the headwind and he turned final approach too far out from the runway. He stated the airplane got too low and the right wing contacted trees just before the airplane crashed on the golf course. The airplane had been airborne for approximately 4 hours prior to the fuel exhaustion. Post accident inspection of the airplane revealed no evidence of fuel at the accident site or in either of the airplane's fuel tanks.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power due to the pilot's inaccurate preflight and inflight planning which resulted in an inadequate fuel supply for the flight, and the subsequent fuel exhaustion. A factor associated with the accident was the trees that the airplane contacted during the landing.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings
1. (C) FLUID,FUEL - EXHAUSTION
2. (C) PREFLIGHT PLANNING/PREPARATION - INACCURATE - PILOT IN COMMAND
3. (C) IN-FLIGHT PLANNING/DECISION - INACCURATE - PILOT IN COMMAND
4. (C) FUEL SUPPLY - INADEQUATE - PILOT IN COMMAND

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

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

Findings
5. (F) OBJECT - TREE(S)

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings
6. TERRAIN CONDITION - GROUND

Factual Information

On February 10, 2005, at 1940 central standard time, a Piper PA-24-250, N5961P, collided with trees and the terrain while on final approach to land on runway 36 at the Bolivar Municipal Airport (M17), Bolivar, Missouri, following a loss of engine power. The private pilot and two passengers were seriously injured. The airplane received substantial damaged. The 14 Code of Federal Regulations Part 91 personal cross-country flight was operating in visual meteorological conditions without a flight plan. The flight originated from the Ottawa Executive Airport (Z98), Zeeland, Michigan, at 1640 eastern standard time (1540 central standard time). The planned destination for the flight was Lamar, Missouri.

The pilot reported the airplane was topped off with fuel prior to departing (Z98). A fuel log indicates the airplane did receive 25.5 gallons of fuel on the day of the accident. He reported that after takeoff, he climbed to an altitude of 8,500 feet at a power setting of 2,400 rpm and 22" of manifold pressure. The pilot stated he leaned the mixture by pulling it back until the engine ran rough, then he increased the mixture until it ran smooth again. The pilot stated he flew just inside the Lake Michigan shoreline to avoid Chicago airspace until he reached Gary, Indiana, at which time he headed direct to Lamar.

The pilot reported he became concerned about the amount of fuel on board when he noticed the "fuel gage drop" when the airplane was just north of Springfield, Missouri. He stated he changed his course to Bolivar, Missouri. He reported the fuel in one of his fuel tanks was exhausted when he was about half way to Bolivar and the other fuel tank was exhausted when he was in the traffic pattern to land at Bolivar. The pilot reported to a Federal Aviation Administration Inspector that he miscalculated the headwind and he turned final approach too far out from the runway. He stated the airplane got too low and the right wing contacted trees just before the airplane crashed on the golf course.

The Polk County, Missouri, 911 Dispatch Office reported they received a cell phone call from the pilot at 1947. The pilot stated they had crashed and he thought they were just north of the airport.

The airplane contacted trees and came to rest inverted on a fairway at the Silo Ridge Golf Course. The airplane was aligned with an extended centerline for runway 36 and approximately one-quarter mile south of the airport.

According to the Missouri State Highway Patrol the airplane contacted 2 trees which were approximately 35 feet tall. The airplane then impacted the ground and came to rest inverted approximately 150 feet away from the trees. According to the Missouri State Highway Patrol there was no fuel spillage at the accident site and both wing tanks were found empty.

The airport manager at the El Dorado Springs Memorial Airport (87K), El Dorado Springs, Missouri, stated he received a radio call from the pilot of N5691P about 1800, stating he was about 30 miles east of 87K, he was concerned his low fuel level, and that he was trying to find an airport where he could purchase fuel. The manager stated that he informed the pilot that they did not sell fuel at 87K and that M17 sold fuel and that they might still be open. He stated he provided the pilot with the common air traffic advisory frequency and the airport identifier.

A mechanic who inspected the airplane after the accident reported no fuel leaked out of the airplane as it was being moved from the accident site. He reported he opened the belly quick drain and only a couple drops of fuel came out. He stated there was no fuel present in either wing tank. He stated he used a lighted mirror to inspect the inside of the wing tanks. He stated the left tank contained a bladder and all of the clips were in place. The right tank had been converted to a wet wing and the interior coating was in good condition. He stated the fuel tanks were not compromised by impact damage.

The winds reported at Springfield, Missouri, located 23 nautical miles south of the accident site at 1952 were calm.

Pilot Information

Certificate:	Private	**Age:**	45,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	April 1, 2003
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 1, 2003
Flight Time:	775 hours (Total, all aircraft), 6 hours (Total, this make and model), 150 hours (Pilot In Command, all aircraft), 18 hours (Last 90 days, all aircraft), 11 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N5961P
Model/Series:	PA-24-250	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	24-1052
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	December 1, 2004 Annual	**Certified Max Gross Wt.:**	2800 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	1620 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-540-A1A5
Registered Owner:	Brian Koeman	**Rated Power:**	250 Horsepower
Operator:	Timothy J. Prantle	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Dusk
Observation Facility, Elevation:	SGF,1267 ft msl	**Distance from Accident Site:**	21 Nautical Miles
Observation Time:	19:52 Local	**Direction from Accident Site:**	185°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	0 knots / 0 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.32 inches Hg	**Temperature/Dew Point:**	-1°C / -5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Zeeland, MI (Z98)	**Type of Flight Plan Filed:**	None
Destination:	Lamar, MO (LLU)	**Type of Clearance:**	None
Departure Time:	16:40 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Serious	**Latitude, Longitude:**	37.596111,-93.348052

Administrative Information

Investigator In Charge (IIC):	Sullivan, Pamela
Additional Participating Persons:	Doug Jackson; FAA; Kansas City, MO
Original Publish Date:	February 28, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=60990