Aviation Investigation Final Report

Location:	Overland Park, Kansas	**Accident Number:**	CHI04LA101
Date & Time:	April 6, 2004, 00:07 Local	**Registration:**	N5844P
Aircraft:	Piper PA-24-250	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation		

Analysis

The airplane sustained substantial damage during a forced landing at night after a loss of engine power. The pilot reported that he had flown from IXD to 7W5, a distance of 519 nautical miles, earlier in the day and that the flight had taken 3 hours and 20 minutes to complete. The airplane was topped off with fuel and the fuel receipt indicated that 38.56 gallons were added. The airplane's fuel tanks held 60 gallons total fuel with 54 gallons useable. The pilot reported that he calculated that the airplane used approximately 12 gallons of fuel per hour. The return flight departed at 2020 cdt and the pilot reported that the engine started running rough at 3 hours and 28 minutes into the flight. He switched the fuel boost pump on and switched the fuel selector from the right to left fuel tank. The pilot reported, "At approximately 2 minutes of running on the left tank the engine started running rough and failed." The pilot executed a forced landing to a grassy area adjacent to a well-lighted street. During the landing rollout, the airplane's wing struck a tree branch. The inspection of the fuel tanks revealed the fuel tanks were dry. The passenger reported that the "first tank ran dry roughly 40 miles from our destination..." and "there were two airports only a couple of miles in front of us. I suggested to him that we land and refuel at one of the airports..." The pilot told the passenger there was enough fuel remaining to land at the destination airport. The pilot had a total of 3,605 flight hours with 10 flight hours in make and model. The passenger reported that the GPS indicated that there was a slight right-quartering headwind of 7 - 10 knots, and it showed an average groundspeed of 130 - 135 knots. The airplane impacted the terrain about 0007 cdt, approximately 3.8 hours after departure. The airplane's Owner's Handbook indicated that the fuel consumption at 75% power at 6,000 feet pressure altitude is 14.1 gph.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadequate fuel calculations and the pilot's improper in-flight decision which resulted in fuel exhaustion. Contributing factors were the trees and the night conditions.

Findings

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

Findings
1. (C) FUEL CONSUMPTION CALCULATIONS - INADEQUATE - PILOT IN COMMAND
2. (C) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
3. (C) FUEL SYSTEM - EXHAUSTION

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

Occurrence #3: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings
4. (F) OBJECT - TREE(S)
5. (F) LIGHT CONDITION - NIGHT

Factual Information

On April 6, 2004, at 0007 central daylight time (cdt), a Piper PA-24-250, N5844P, sustained substantial damage during a forced landing near Overland Park, Kansas, after a loss of engine power. The pilot and passenger were not injured. The 14 CFR Part 91 business flight departed the Henry County Airport (7W5), Napoleon, Ohio, at 2020 cdt, and was en route to New Century AirCenter Airport (IXD), Olathe, Kansas. Night visual meteorological conditions prevailed at the time of the accident. A visual flight rules (VFR) flight plan was filed.

The pilot reported that on April 5, 2004, he had flown N5844P from IXD to 7W5, a distance of 519 nautical miles, in order to pick up the passenger and fly him back to IXD. The passenger had arranged to purchase the airplane, but the sale of the airplane needed to be finalized at IXD.

The pilot reported that he had departed IXD at 1410 cdt with the airplane's fuel tanks full of fuel. He reported that he arrived at 7W5 at 1930 cdt and that the flight had taken 3 hours and 20 minutes to complete.

The pilot reported that he met the passenger and they fueled the airplane for the return trip at a self-service fuel pump. The pilot reported that he told the passenger to fill the tanks completely with fuel. The pilot examined the fuel level and observed the fuel "within 1/2 inch of overflowing the filler cap." The fuel receipt indicated that 38.56 gallons were added to the airplane's tanks. The airplane's fuel tanks held 60 gallons total fuel with 54 gallons useable. The pilot reported that he calculated that the airplane used approximately 12 gallons of fuel per hour.

In a written statement, the passenger reported that he visually inspected the fuel level and that the fuel was "up to the mid section of the ring the fuel cap slides into."

The pilot reported that they departed from 7W5 at 2020 cdt and climbed to 6,500 feet mean sea level and established a direct course to IXD using the on-board GPS and autopilot. He reported that he switched fuel tanks every 30 minutes to keep the fuel tanks balanced. He reported that the engine started running rough at 3 hours and 28 minutes into the flight. He switched the fuel boost pump on and switched the fuel selector from the right to left fuel tank. The engine's power came back up and the pilot started a VFR descent. The pilot reported, "Also at this point, I could see the beacon from OJC and suspecting there may be a fuel problem, I made a course change and headed toward the Executive field that I could have arrived at within 3-4 minutes."

The passenger reported that the "first tank ran dry roughly 40 miles from our destination. He [the pilot] immediately shut the autopilot off, switched on the fuel pump, and switched fuel

tanks. Within 10 - 15 seconds, the airplane was back to normal cruise." The passenger reported that the GPS indicated "there were two airports only a couple of miles in front of us. I suggested to him that we land and refuel at one of the airports because it would look pretty stupid to come up short on fuel after flying past two airports." He reported that the pilot told him that there was enough fuel remaining to land at the destination airport.

The pilot reported, "At approximately 2 minutes of running on the left tank the engine started running rough and failed." He advised air traffic control (ATC) that he had an engine failure and declared an emergency. The pilot executed a forced landing to a grassy area adjacent to a well-lighted street. During the landing rollout, the airplane's wing struck a tree branch. The airplane impacted the terrain about 0007 cdt, approximately 3.8 hours after departure.

An inspection of the airplane revealed damage to the right wing, undercarriage, and propeller. The inspection of the fuel tanks revealed the fuel tanks were dry. An inspection of the fuel tanks revealed that the fuel tank bladders were intact and had not collapsed.

The pilot was an airline transport pilot with single and multi-engine ratings. He held a First Class medical certificate. He had a total of 3,605 flight hours. He had 10 flight hours in the PA-24-250.

The airplane was a Piper PA-24-250, serial number 24-925. The engine was a 250 horsepower Lycoming O-540 engine. The airplane's Owner's Handbook indicated that the fuel consumption at 75% power at 6,000 feet pressure altitude is 14.1 gph.

The airplane was equipped with a Garmin GNS 430 GPS. It was programmed to display a message at 30 minute intervals for the purpose of managing the fuel balance between the two wing tanks. The passenger reported that the GPS "allowed for the winds aloft to be figured out. We did this 3 or 4 times - each time it appeared there was a slight right-quartering headwind of 7 - 10 knots. The flight was smooth the entire way, with the GPS showing a groundspeed average of 130 - 135 knots."

Pilot Information

Certificate:	Airline transport	**Age:**	47,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	October 29, 2003
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	November 23, 2003
Flight Time:	3605 hours (Total, all aircraft), 10 hours (Total, this make and model), 3283 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N5844P
Model/Series:	PA-24-250	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	24-925
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	July 15, 2003 Annual	**Certified Max Gross Wt.:**	2880 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2267 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-540
Registered Owner:	Adams Serrhel G JR	**Rated Power:**	250 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	IXD,1087 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	23:53 Local	**Direction from Accident Site:**	240°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 8500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	150°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.01 inches Hg	**Temperature/Dew Point:**	13°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Napoleon , OH (7W5)	**Type of Flight Plan Filed:**	None
Destination:	OLATHE, KS (IXD)	**Type of Clearance:**	VFR flight following
Departure Time:	21:20 Local	**Type of Airspace:**	Class E

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:**	38.830833,-94.890274

Administrative Information

Investigator In Charge (IIC):	Silliman, James
Additional Participating Persons:	Doug Jackson; FAA ; Kansas City, MO
Original Publish Date:	September 1, 2004
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=59057