Aviation Investigation Final Report

Location:	BOURBON, Indiana	**Accident Number:**	CHI96LA096
Date & Time:	February 24, 1996, 10:30 Local	**Registration:**	N6939B
Aircraft:	PIPER PA-22-150	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

About 7 minutes after reaching cruise altitude, the pilot switched from the right to left fuel tank. He said the engine ran for about 7 more minutes and stopped. He said when he switched back to the original fuel tank, the engine power surged and then stopped. The pilot said his attempt to restart the engine was unsuccessful. The airplane was landed in a muddy field on its main landing gear, and it nosed over shortly after touchdown. The main landing gear tires were caked with mud. The tailwheel had no mud on it. An on-scene investigation revealed engine control continuity. About 7 gallons of fuel were found in the left fuel tank, and about 1 quart was found in the right fuel tank. The fuel tank cap gaskets were not damaged. Traces of dirty water were found in the carburetor float bowl and fuel strainer. The ignition system was tested, and it met the manufacturer's operating specifications. The FAA's Flight Training Handbook stated that a soft field landing in a tailwheel airplane should be done with the tailwheel touching down with or just before the main landing gear tires.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Water contamination in the fuel, and an inadequate preflight by the pilot. Factors relating to the accident were: soft terrain in the emergency landing area, and an improper soft field landing procedure used by the pilot.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: CRUISE

Findings
1. (C) FLUID,FUEL - CONTAMINATION,WATER
2. (C) AIRCRAFT PREFLIGHT - INADEQUATE - PILOT IN COMMAND

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

Occurrence #3: NOSE OVER
Phase of Operation: EMERGENCY LANDING

Findings
3. (F) TERRAIN CONDITION - SOFT
4. (F) SOFT FIELD LANDING/PROCEDURE - IMPROPER - PILOT IN COMMAND

Factual Information

On February 24, 1996, at 1030 eastern standard time (est), a Piper PA-22-150, N6939B, piloted by a private pilot, was substantially damaged when it nosed over during a forced landing onto a muddy field. The pilot reported a total loss of power during cruise flight. The 14 CFR Part 91 flight was not operating on a flight plan. Visual meteorological conditions prevailed at the time of the accident. The pilot and pilot rated passenger reported no injuries. The flight departed Rochester, Indiana, at 1015 est.

The pilot said the airplane had been flying about 7 minutes when he changed his fuel tank selector position from the "Right" to "Left." He said N6939B's engine abruptly stopped running about 7 minutes later. Following the power loss the pilot said he immediately switched back to the "Right" fuel tank. The pilot said the engine power surged once and then stopped. He said the engine would not start after he manipulated the engine controls and magnetos.

The passenger, according to the pilot, continued to prime the engine during the emergency descent. The engine did not regain power during this activity. The pilot said the airplane could not glide to the field he had originally chosen. He said he had to use a plowed field next to his chosen field. The pilot said he could not line up with the field's furrows due to his airplane's altitude and heading. The airplane landed cross-furrow, nosing over shortly after touchdown.

The passenger said the engine stopped running suddenly when the pilot switched fuel tanks. He said the pilot switched the fuel selector back to the "Right" fuel tank and the engine power surged briefly. The engine stopped running immediately after the power surge.

A Federal Aviation Administration Principal Maintenance Inspector (PMI) represented the NTSB during the on-scene investigation. The PMI said the field was very soft mud. He reported that N6939B's main landing gear tires were caked with mud. The tailwheel did not have any mud on it according to the PMI. The PMI said fuel was leaking out of both fuel tank caps. The PMI said he found "...several droplets of dirty water..." in the fuel strainer. No water was found when the fuel system sumps were drained.

The magnetos, sparkplug leads, and sparkplugs were tested on a testing unit. The PMI said the ignition components met the manufacturer's operating specifications during the test. According to the PMI, engine control continuity was established for the throttle, mixture, and carburetor heat.

The carburetor's finger screen was not contaminated. Inspection of the carburetor float bowl revealed 2, 1/2 diameter by 1/4 inch deep markings on either side of the bowl. These markings "...indicated there had been some water or other foreign mater that had dried and since flaked off..." according to the PMI.

Contaminants were not found in the carburetor's accelerator pump well. The carburetor's seals and gaskets did not show evidence of deterioration. The carburetor's metering valve and jet were free of contamination. The needle valve was not damaged and its set was not obstructed.

According to the PMI, the right fuel tank had about 1 quart of fuel in it. The left fuel tank had about 7 gallons of fuel in it. He said the airplane had been upside down in a wing's level position with a 10 degree nose down attitude. The PMI said the fuel caps were tightly installed and their respective gaskets were not damaged.

The FAA's Flight Training Handbook, AC 61-21A, states that a soft field landing in a tailwheel airplane should be done with the tailwheel "...touch[ing] down with or just before the main wheels... ." On-scene evidence showed N6939B landed on its right main gear tire, then its left main gear tire, followed by the right tire. Its landing roll was about 50 feet before it nosed over. The valleys between the furrows were about 6 inches below the rounded furrow crowns.

Pilot Information

Certificate:	Private	**Age:**	47,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	October 28, 1994
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	2300 hours (Total, all aircraft), 1000 hours (Total, this make and model), 5 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	PIPER	**Registration:**	N6939B
Model/Series:	PA-22-150 PA-22-150	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	22-4218
Landing Gear Type:	Tailwheel	**Seats:**	4
Date/Type of Last Inspection:	February 9, 1996 Annual	**Certified Max Gross Wt.:**	2000 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3736 Hrs	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, not activated	**Engine Model/Series:**	O-320
Registered Owner:	GARY L. ELLIOT	**Rated Power:**	150 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Unknown	**Visibility**	10 miles
Lowest Ceiling:	Unknown	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	ROCHESTER , IN (RCR)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	10:15 Local	**Type of Airspace:**	Class G

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	41.339427,-86.310653(est)

Administrative Information

Investigator In Charge (IIC):	Gattolin, Frank
Additional Participating Persons:	TED WILLIS; INDIANAPOLIS , IN
Original Publish Date:	May 29, 1996
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=10199