Aviation Investigation Final Report

Location:	Bangor, Michigan	**Accident Number:**	CEN12LA348
Date & Time:	June 6, 2012, 10:15 Local	**Registration:**	N3431A
Aircraft:	Piper PA-22-135	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

On the day before the accident, the owner/pilot made a forced landing to a field due to a loss of engine power. No damage was incurred during that event. Examination of the airplane after the off-airport landing revealed that the gascolator screen was almost completely plugged by a flaky, shellac-type material. The airplane had a history of automotive fuel use, and the inspector who examined the airplane told the pilot that he should have a local mechanic do a thorough fuel system evaluation and flushing before further flight. He reminded the pilot that there were screens in the fuel tanks, carburetor, and in the belly sump that should be checked and cleaned. On the day of the accident flight, the pilot and a local mechanic added fuel to the right fuel tank and performed fuel flow tests. The pilot then attempted to take off, and the engine stopped producing power. The airplane impacted the ground in a left turn and nosed over. Examination of the airplane after the accident revealed that the carburetor and gascolator screens were 50 percent obstructed. Neither the pilot nor the mechanic indicated in their postaccident statements that the gascolator, carburetor, or fuel tank screens were checked or that the fuel system was flushed to remove the residual fuel system contaminants. Based on the available evidence, it is likely that the engine power loss was due to the obstruction of the fuel system screens, which prevented adequate fuel flow to the engine.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to properly service the fuel system, and subsequent decision to conduct the flight with known fuel system deficiencies, which led to the total loss of engine power.

Findings

Aircraft	Fuel filter-strainer - Not serviced/maintained
Personnel issues	Decision making/judgment - Pilot
Aircraft	(general) - Not serviced/maintained
Personnel issues	(general) - Pilot

Factual Information

History of Flight

Prior to flight	Aircraft maintenance event
Initial climb	Loss of engine power (total) (Defining event)
Maneuvering	Collision with terr/obj (non-CFIT)

On June 6, 2012, about 1015 eastern daylight time, a Piper PA-22-135, N3431A received substantial damage when it impacted the ground and nosed over after it was unable to climb after takeoff from an unimproved field near Bangor, Michigan. The private pilot received serious injuries. The aircraft was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed for the flight, which was not operated on a flight plan. The flight was originating at the time of the accident and was destined for the South Haven Area Regional Airport (LWA), South Haven, Michigan.

On the day prior to the accident, June 5, 2012, the pilot was flying the airplane to LWA when he experienced a loss of engine power and executed a forced landing into a field. The airplane was not damaged during the off-airport landing. On the day of the accident, the pilot was attempting to take off from the same field in order to continue to LWA. The pilot reported that after takeoff, the engine stopped producing power and he was attempting to return to the field. The airplane was in a left turn when it struck the ground. The pilot reported that he had added fuel to the right fuel tank and accomplished fuel flow tests on the ground prior to the accident. He stated that the fuel flow from the left tank was not adequate, but flow from the right tank was. He stated that he ran the engine for about 20 minutes on the right tank at high power settings before the attempted flight.

A local mechanic who was a witness to the accident reported that the owner enlisted his help to rectify a fuel flow issue. He stated that on the morning of the accident, they added 10 gallons of fuel to the right fuel tank. They then removed the gascolator bowl and timed the fuel flow. The left tank took 7 minutes to flow one gallon of fuel and the right tank took 6 minutes to flow one gallon of fuel. They then performed a run-up to full power on both fuel tanks. He stated that the pilot then attempted to take-off. He said the airplane was slow to clear the ground and gain altitude. It then turned left and descended at which point the witnesses view was obstructed by terrain.

A postaccident examination of the airplane after the landing in the field on June 5, 2012, confirmed that the airplane was not damaged. The gascolator screen was found to be almost completely plugged by a flaky shellac type material. The owner reported to the Federal Aviation Administration (FAA) inspector that the airplane had a long history of auto fuel use and that he had been getting the shellac type material from the fuel sumps on the airplane. The inspector

and the owner discussed that the owner would get a local mechanic and do a thorough fuel system evaluation and flushing before further flight. The inspector reminded the pilot that there were screens in the fuel tanks, carburetor, and in the belly sump that should be checked and cleaned.

A second examination of the airplane after the accident on June 6, 2012 revealed that the gascolator and the carburetor inlet screens were about 50 percent restricted.

Neither the pilot nor the mechanics report made mention of having performed a flushing of the fuel system or checking/cleaning of the fuel tank screens in the fuel tanks, carburetor, or gascolator.

Pilot Information

Certificate:	Private	**Age:**	72,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:**	June 14, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 15, 2012
Flight Time:	5000 hours (Total, all aircraft), 1500 hours (Total, this make and model), 5000 hours (Pilot In Command, all aircraft), 9 hours (Last 90 days, all aircraft), 9 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N3431A
Model/Series:	PA-22-135	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	22-1700
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	July 6, 2011 Annual	**Certified Max Gross Wt.:**	1950 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3784 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	0-290 SERIES
Registered Owner:	On file	**Rated Power:**	135 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:	LWA,666 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	10:14 Local	**Direction from Accident Site:**	315°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	330°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.09 inches Hg	**Temperature/Dew Point:**	18°C / 11°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Bangor, MI	**Type of Flight Plan Filed:**	None
Destination:	South Haven, MI (LWA)	**Type of Clearance:**	None
Departure Time:	10:15 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	42.309505,-86.110992(est)

Administrative Information

Investigator In Charge (IIC):	Brannen, John
Additional Participating Persons:	James Gotha; FAA - Grand Rapids FSDO; Grand Rapids, MI
Original Publish Date:	September 5, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=83893