Aviation Investigation Final Report

Location:	Milwaukee, Wisconsin	**Accident Number:**	CHI01LA271
Date & Time:	August 9, 2001, 21:15 Local	**Registration:**	N9106V
Aircraft:	Piper PA-46-310P	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation		

Analysis

The airplane experienced a partial loss of engine power, which was followed by a total loss of engine power while climbing through 200-300 feet agl from the departure airport. The pilot reported pushing the airplane down so as to land on a field with houses located in the direction of the landing path. The touchdown speed was reported by the pilot as being 90 mph. Five postaccident engine runs did not duplicate a similar loss of engine power. The top engine spark plugs were removed following the engine runs and were black and sooty in appearance. The engine driven fuel pump was removed and reported by the engine manufacturer to have a discharge pressure exceeding its maximum specified pressure.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the rich fuel mixture and the unsuitable landing area encountered by the pilot. Contributing factors were the high output of the fuel pump and the low altitude.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (F) FUEL SYSTEM,PUMP - OUTPUT HIGH
2. (C) MIXTURE - EXCESSIVE

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: EMERGENCY LANDING

Findings
3. (C) UNSUITABLE TERRAIN OR TAKEOFF/LANDING/TAXI AREA - ENCOUNTERED - PILOT IN COMMAND
4. (F) ALTITUDE - LOW - PILOT IN COMMAND

Factual Information

On August 9, 2001, at 2115 central daylight time, a Piper PA-46-310P, N9106V, owned and piloted by a private pilot, was substantially damaged on impact with terrain during a forced landing on a field. The pilot reported that a partial loss of engine power followed by a surge and then a total loss of engine power occurred during initial climb from runway 15L (4,107 feet by 75 feet, asphalt) at the Lawrence J. Timmerman Airport, Milwaukee, Wisconsin. Night visual meteorological conditions prevailed at the time of the accident. The 14 CFR Part 91 business flight was operating on an instrument flight rules flight plan. The private pilot received minor injuries. The flight was en route to the Outagamie County Regional Airport, Appleton, Wisconsin.

In a written statement, the pilot reported that at an estimated 200-300 feet agl there was a 50 percent loss of engine power which lasted for 1-2 seconds in duration. The engine then returned to full power at a point which was too late to abort. When the engine returned to full power, the pilot began a slow turn to the left to return to the airport. After 5-10 seconds, there was a total loss of engine power at an estimated altitude of 400 feet agl. He estimated that there was 15 seconds to ground contact. He leveled the wings, switched fuel tanks and selected the auxiliary fuel pump to high. He initially saw a road to land on and then saw a field below which was 500 feet by 300 feet with houses in the flight path. He pushed the elevator down for a firm landing and experienced a hard ground contact and a 140 foot long ground run. The airplane stopped 150 feet short of the house located in the center of the field.

During a telephone interview, the pilot reported that he did not have time to look at the fuel flow gauge and did not have time to select alternate air. The pilot also stated that he touched down at 90 mph when he "pushed it down hard" to land the airplane.

A Teledyne Continental Motors (TCM) TSIO-550-C1B, serial number 802545-R, engine replaced the installation of a Continental TSIO-520-BE engine under supplemental type certificate SA00380AT held by VK Leasing of Saint Petersburg, Florida. The engine accumulated a total time since a factory remanufacture by TCM of 32.8 hours. The date of installation of the engine onto the airframe was recorded as June 15, 2001. Engine logs indicate that maintenance performed since the engine's installation included an oil and filter change, followed by an operational check, which was reported as good, and the installation of a new interturbine temperature probe on the left turbocharger. The logs also indicate that no metal was found during the oil change.

In preparation of a postaccident engine run, both wing fuel tanks were filled with a total of twenty five gallons of 100 low lead aviation fuel and the damaged propeller was replaced with one that was similar in make and model. Five separate engine runs were performed with the engine attached to the airframe with selections made between fuel tanks. During the first

engine run, the left and right magnetos were selected and a subsequent drop in engine speed of 75-100 rpm was noted at engine speeds of 1,000 rpm and 1,700 rpm. When the throttle was advanced to the full forward position, the engine tachometer indicated redline and the manifold pressure gauge indicated a three-inch over boost. The engine ran rough when it reached an over boost condition. During the second engine run, the throttle was advanced to the redline position. The fuel boost pump was then selected to the "low" position and no effect on engine operation was noted. The fuel boost pump switch was then selected to the "high" position and the engine quit. When the fuel boost pump was selected to the "off" position, the engine then started. During the third engine run, the throttle was advanced to the manifold pressure gauge's redline and the fuel tank selector was selected to the opposite fuel tank. No hesitation was reported following the selection to the opposite fuel tank. During the fourth engine run, the fuel pressure was recorded at 20 psi prior to engine start with the fuel boost pump selected to "high". At an engine speed of 600 rpm, unmetered fuel pressure was recorded as 6.5 psi with the fuel boost pump switch in the "off" position and 8.0 psi with the fuel boost pump switch in the "low" position. With the manifold pressure gauge indicating redline, the fuel pressure was recorded as 35-36 psi. When the fuel boost pump was selected to "high", the fuel pressure increased to 46-47 psi and the engine quit . When the throttle was reduced with the fuel boost pump in the "off" position, the fuel pressure increased to 40 psi. During the fifth engine run, a pressure of 17-18 psi was recorded at location prior to the manifold valve and after the fuel transducer. When the boost pump was selected to low, the pressure was 25 psi. There was no pressure surge upon throttle reduction. The engine driven fuel pump was removed and sent to TCM for testing. Photos of the top spark plugs were taken following the engine runs and are included in this report.

The pump was tested without the supervision of the Federal Aviation Administration (FAA) or the National Transportation Safety Board and its results were reported by TCM as follows. The pump had a discharge pressure of 28.1 psi at 2,700 rpm with ambient pressure applied; the discharge pressure specification was 19-22 psi. With 36 inches of mercury applied, the discharge pressure was 57.2 psi; the discharge specification was 32.5 psi.

The FAA, Piper Aircraft and TCM were parties to the investigation.

The wreckage was released to the registered owner's insurance representative on August 22, 2001.

Pilot Information

Certificate:	Private	**Age:**	48,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):		**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 None	**Last FAA Medical Exam:**	August 6, 2001
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	August 6, 2001
Flight Time:	4030 hours (Total, all aircraft), 997 hours (Total, this make and model), 4030 hours (Pilot In Command, all aircraft), 107 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N9106V
Model/Series:	PA-46-310P	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	4608026
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	June 15, 2001 Annual	**Certified Max Gross Wt.:**	4100 lbs
Time Since Last Inspection:	32.8 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2661.2 Hrs	**Engine Manufacturer:**	Teledyne Cont
ELT:	Installed, activated	**Engine Model/Series:**	TSIO-550-C1B
Registered Owner:	Jon D. McMurtrie	**Rated Power:**	350 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night/dark
Observation Facility, Elevation:	MWC,745 ft msl	**Distance from Accident Site:**	
Observation Time:	21:45 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	7 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots / 0 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	250°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.92 inches Hg	**Temperature/Dew Point:**	30°C
Precipitation and Obscuration:			
Departure Point:	Milwaukee, WI (MWC)	**Type of Flight Plan Filed:**	IFR
Destination:	Appleton, WI (ATW)	**Type of Clearance:**	
Departure Time:	21:15 Local	**Type of Airspace:**	

Airport Information

Airport:	Lawrence J. Timmerman MWC	**Runway Surface Type:**	
Airport Elevation:	745 ft msl	**Runway Surface Condition:**	
Runway Used:	15L	**IFR Approach:**	Unknown
Runway Length/Width:	4107 ft / 75 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	Chuck Ebert; Federal Aviation Administration; Milwaukee, WI Michael McClure; The New Piper Aircraft, Inc.; Arlington, TX R. S. Boyle; Teledyne Continental Motors; Arvada, CO
Original Publish Date:	June 4, 2002
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=52995