Aviation Investigation Final Report

Location:	Taylor, Pennsylvania	**Accident Number:**	NYC04LA105
Date & Time:	April 13, 2004, 12:30 Local	**Registration:**	N861DD
Aircraft:	Piper PA-46-310P	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane was in a climb at 5,500 feet, when the engine began to vibrate and lose power. The pilot observed an increase in oil temperature, and a decrease in oil pressure; which was followed by a total loss of engine power. The pilot performed a forced landing to a field; however, during the landing, the airplane's left wing impacted a tree. Examination of the airplane revealed streaks of oil on the engine cowling, and a 6-inch hole in the top of the engine crankcase, in the vicinity of the number 2 cylinder. Further examination revealed that the number 2 connecting rod was broken into four pieces. The connecting rod journal was black in color and the metal had a "smeared" appearance. Fretting was observed on the mating surfaces of the number 2 main bearing saddles. In addition, the bearing shells had "walked" towards the rear of the engine about 1/4 of an inch. The crankcase through-bolt torques could not be determined. According to a representative of the engine manufacturer, a bearing shift could result in a decrease in oil flow to the journal, and a subsequent catastrophic engine failure. The airplane had been operated for 26 hours, since it's most recent annual inspection, which was performed about a month prior to the accident. The engine had been operated for about 1,700 hours, since it was rebuilt by TCM about 9 years prior to the accident.. The number 2 and 4 cylinders had been replaced about 830 hours prior to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of the number 2 connecting rod, after a main bearing shift, which resulted in a catastrophic engine failure.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF
Phase of Operation: CRUISE

Findings
1. (C) ENGINE ASSEMBLY,BEARING - SHIFTED
2. (C) ENGINE ASSEMBLY,CONNECTING ROD - FAILURE

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

Occurrence #3: ON GROUND/WATER COLLISION WITH OBJECT
Phase of Operation: DESCENT - EMERGENCY

Findings
3. OBJECT - TREE(S)

Factual Information

On April 13, 2004, about 1230 eastern daylight time, a Piper PA-46-310P, N861DD, experienced a loss of engine power while in cruise flight, and was substantially damaged during a forced landing in Taylor, Pennsylvania. The certificated commercial pilot and a passenger were not injured. Instrument meteorological conditions prevailed and an instrument flight rules flight plan was filed for the flight that departed Seamans Field, Factoryville, Pennsylvania, destined for Lancaster, Pennsylvania. The personal flight was conducted under 14 CFR Part 91.

The pilot reported that the airplane was in a climb at 5,500 feet, when the engine began to vibrate and lose power. He also observed an increase in oil temperature, and a decrease in oil pressure; which was followed by a total loss of engine power. The pilot established a glide and "broke out" of the clouds at 2,000 feet. He then performed a forced landing to a field; however, during the landing, the airplane's left wing impacted a tree.

The airplane was equipped with a Teledyne Continental Motors (TCM) TSIO-520-BE engine.

Initial examination of the airplane by a Federal Aviation Administration (FAA) inspector revealed streaks of oil on the engine cowling. A 6-inch hole was observed in the top of the engine crankcase, in the vicinity of the number 2 cylinder, and the left magneto was separated. The engine was retained for further examination.

The engine was disassembled and examined under the supervision of an FAA inspector. The examination revealed that the number 2 connecting rod was broken into four pieces. The connecting rod journal was black in color and the metal had a "smeared" appearance. Fretting was observed on the mating surfaces of the number 2 main bearing saddles. In addition, the bearing shells had "walked" towards the rear of the engine about 1/4 of an inch. The crankcase through-bolt torques could not be determined. According to a TCM representative, a bearing shift could result in a decrease in oil flow to the journal, and a subsequent catastrophic engine failure.

The airplane had been operated for 26 hours, since it's most recent annual inspection, which was performed on March 8, 2004. The engine had been operated for about 1,700 hours, since it was rebuilt by TCM on February 21, 1995. The number 2 and 4 cylinders had been replaced about 830 hours prior to the accident.

Pilot Information

Certificate:	Commercial	**Age:**	41,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	October 24, 2002
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	December 11, 2003
Flight Time:	551 hours (Total, all aircraft), 16 hours (Total, this make and model), 349 hours (Pilot In Command, all aircraft), 3 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N861DD
Model/Series:	PA-46-310P	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	46-86002
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	March 8, 2004 Annual	**Certified Max Gross Wt.:**	4100 lbs
Time Since Last Inspection:	26 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3448 Hrs at time of accident	**Engine Manufacturer:**	Teledyne Continental
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-520BE
Registered Owner:	Robert H. Schreckengaust	**Rated Power:**	310 Horsepower
Operator:	Timothy Morgan	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	AVP,962 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	12:54 Local	**Direction from Accident Site:**	360°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 1000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	50°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.79 inches Hg	**Temperature/Dew Point:**	8°C / 6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Factoryville, PA (9N3)	**Type of Flight Plan Filed:**	IFR
Destination:	Lancaster, PA (LNS)	**Type of Clearance:**	IFR
Departure Time:	12:10 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:**	41.386112,-75.675003

Administrative Information

Investigator In Charge (IIC):	Schiada, Luke
Additional Participating Persons:	Steve Hudak; FAA Allentown FSDO; Allentown, PA Scott Boyle; Teledyne Continental Motors; Mobile, AL
Original Publish Date:	February 24, 2005
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=59061