



National Transportation Safety Board Aviation Accident Final Report

Location:	Coldwater, MI	Accident Number:	CEN10LA037
Date & Time:	11/02/2009, 1403 EST	Registration:	N8364W
Aircraft:	PIPER PA-28-180	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (total)	Injuries:	1 Minor
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot reported that he was in cruise flight at 2,500 feet above mean sea level when the engine oil temperatures started to rise. He started to divert to a nearby airport, but the engine seized and he executed a forced landing to a field. The inspection of the engine revealed a hole in the crankcase at the #4 cylinder position. The #4 piston connecting rod was found disconnected from the crankshaft, and it was deformed and bent into a “U” shape. The #4 connecting rod cap was separated from the #4 connecting rod. One of the connecting rod bolts was found sheared in half with the nut still attached to one end of the bolt. The other connecting rod bolt was not located in the connecting rod or in the rod cap. A connecting rod bolt was found in the bottom of the engine. The bolt threads exhibited some impact damage, but otherwise, the connecting rod bolt was intact and was not bent. The nut for the connecting rod bolt was not located in the engine. The engine logbook indicated that four new pistons were installed on May 31, 2003. The logbook entry did not indicate that the connecting rods had been replaced. On May 1, 2007, the #4 cylinder was replaced, but there was no indication in the logbook entry that the #4 piston or connecting rod had been repaired or replaced.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power due to the separation of the No. 4 piston connecting rod as a result of inadequate torque of the connecting rod bolt.

Findings

Aircraft	Recip engine power section - Failure (Cause)
	Recip engine power section - Incorrect service/maintenance (Cause)

Factual Information

On November 2, 2009, at 1403 eastern standard time, a Piper PA-28-180, N8364W, sustained substantial damage during a forced landing to a field about 2 miles southeast of the Branch County Memorial Airport (EOB), Coldwater, Michigan. The airplane experienced a total loss of engine power when the engine seized during cruise flight at 2,500 feet above mean sea level (msl). The pilot, the sole occupant, received minor injuries. The 14 Code of Federal Regulations Part 91 flight departed Pontiac, Michigan, about 1300 and was en route to Champaign, Illinois. Visual meteorological conditions prevailed and a visual flight rules (VFR) flight plan was filed.

The pilot reported that while he was in cruise flight the oil temperature started rising so he decided to land at EOB. When he was about five miles from the airport, the engine started making noise and then the propeller “froze.” He executed a forced landing to a field and the airplane sustained substantial damage.

A Federal Aviation Administration (FAA) airworthiness inspector examined the airplane. The engine was a 180 horsepower Lycoming O-360-A3A. A hole was observed on the top of the engine crankcase at the #4 cylinder position. The #4 cylinder was removed. The #4 piston connecting rod was found disconnected from the crankshaft, and it was deformed and bent into a “U” shape. The #4 connecting rod cap was separated from the #4 connecting rod. One of the connecting bolts was found sheared in half with the nut still attached to one end of the bolt. The other connecting rod bolt was not located in the connecting rod or in the rod cap. A connecting rod bolt was found in the bottom of the engine. The bolt threads exhibited some impact damage, but otherwise, the connecting rod bolt was intact and was not bent. The nut for the connecting rod bolt was not located in the engine. The connecting rod bolts for the #3 connecting rod and rod cap were found sheared in half, but the nuts were still attached to the connecting rod bolts.

The engine logbook indicated that four new pistons were installed on May 31, 2003. The logbook entry did not indicate that the connecting rods had been replaced. On May 1, 2007, the #4 cylinder was replaced, but there was no indication in the logbook entry that the #4 piston or connecting rod had been repaired or replaced. On September 12, 2007, the #3 cylinder was replaced, but there was no indication in the logbook entry that the #3 piston or connecting rod had been repaired or replaced.

History of Flight

Enroute-cruise	Loss of engine power (total) (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Private	Age:	53, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt
Instrument Rating(s):	None	Second Pilot Present:	
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	None Unknown	Last Medical Exam:	08/09/2006
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	464 hours (Total, all aircraft), 464 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	PIPER	Registration:	N8364W
Model/Series:	PA-28-180	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	28-2559
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	12/20/2008, Annual	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	O-360-A3A
Registered Owner:	Nicholas George Pathenos	Rated Power:	180 hp
Operator:	Nicholas George Pathenos	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	BTL, 952 ft msl	Observation Time:	1253 EST
Distance from Accident Site:	24 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	360°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Scattered / 7000 ft agl	Temperature/Dew Point:	11°C / 5°C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	14 knots, 230°	Visibility (RVR):	
Altimeter Setting:	30.05 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:			
Departure Point:	Pontiac, MI (PTK)	Type of Flight Plan Filed:	None
Destination:	Champagne, IL (CMI)	Type of Clearance:	VFR
Departure Time:	1300 CDT	Type of Airspace:	

Airport Information

Airport:	Branch County Memorial Airport (EOB)	Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	N/A	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced Landing

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	James P Silliman	Adopted Date:	07/22/2010
Additional Participating Persons:	Dan Sedberry; FAA South Bend FSDO; South Bend, IN		
Publish Date:	07/22/2010		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=74998		

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