



National Transportation Safety Board Aviation Accident Final Report

Location:	DES MOINES, IA	Accident Number:	CHI97LA097
Date & Time:	04/01/1997, 1824 CST	Registration:	N9004W
Aircraft:	Piper PA-28-235	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 None

Flight Conducted Under: Part 91: General Aviation - Personal

Analysis

The pilot reported that about 40 minutes after takeoff the tachometer started surging. The oil pressure gauge dropped to zero and the engine started knocking. The engine seized and the pilot landed the airplane in a soy bean field. During landing rollout the airplane hit some large ruts which collapsed the landing gear. The engine examination indicated the number six connecting rod had failed and knocked a hole in the top of the crankcase. The number three upper piston pin plug had deteriorated and was contaminating the engine with aluminum metal. The oil filter was opened and evidence of aluminum metal contamination was found. The cam shaft and tappets indicated various stages of spalling. Rust was noted inside all cylinder walls and all the connecting rods had surface rust on them. In addition to the separated number six connecting rod, the number four and five connecting rods were blued and not free to move. The pilot reported that the oil filter was not opened during the oil changes to inspect for metal contamination. The pilot was unaware that the engine oil filter indicated that the oil system was contaminated with metal particles.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: oil contamination and starvation due to the inadequate maintenance inspection of the pilot/owner. Factors included the deterioration of the piston pin plug, the connecting rod failure, and the unsuitable terrain for landing.

Findings

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

Findings

1. (F) ENGINE ASSEMBLY,CONNECTING ROD - FAILURE
2. (F) ENGINE ASSEMBLY,BEARING - MELTED
3. (F) ENGINE ASSEMBLY,OTHER - DETERIORATED
4. (C) LUBRICATING SYSTEM - CONTAMINATION
5. (C) LUBRICATING SYSTEM - STARVATION
6. (C) MAINTENANCE,INSPECTION - INADEQUATE - PILOT IN COMMAND

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

Occurrence #3: COMPLETE GEAR COLLAPSED
Phase of Operation: LANDING - ROLL

Findings

7. TERRAIN CONDITION - ROUGH/UNEVEN
8. (F) UNSUITABLE TERRAIN OR TAKEOFF/LANDING/TAXI AREA - SELECTED - PILOT IN COMMAND

Factual Information

On April 1, 1997, at 1824 central standard time, a Piper PA-28-235, N9004W, sustained substantial damage during a forced landing due to loss of engine power near Des Moines, Iowa. The commercial pilot was not injured. The 14 CFR Part 91 flight departed Morning Star Airport, Des Moines, Iowa, on a local flight. Visual meteorological conditions prevailed and no flight plan had been filed.

The pilot reported that he had preflighted the airplane thoroughly before departure. After takeoff he climbed to about 2,500 feet mean sea level (msl) and was at cruise power with the propeller set at 2,300 rpm. About 40 minutes after takeoff, the tachometer went from 2,300 rpm to 2,600 rpm, and then down to 2,200 rpm. The pilot reported that the engine sounded "okay," with no backfiring, mis-firing, or rough running of any kind. He pulled the carburetor heat, checked magnetos, fuel switches, and set the mixture to rich. He reported that he saw the oil pressure gauge read zero about 30 seconds before he made the decision to land in a field for a forced landing. The engine was knocking and it seized before the pilot landed the airplane in a soy bean field. During landing rollout the airplane hit some large ruts which collapsed the landing gear.

The engine and engine logbooks were examined. It was determined that the engine was a remanufactured engine that had been installed on the airplane in 1980. The engine had about 600 hours total operating time since being installed on the airplane. The pilot reported that one of the reasons he had purchased the airplane was because the engine was a low time engine.

The engine examination revealed that the number six connecting rod had separated and knocked a hole in the top of the crankcase. During the engine teardown, it was determined that the number three upper piston pin plug had been deteriorating and contaminating the engine with aluminum metal. The oil filter was opened and evidence of aluminum metal contamination was found. The oil pressure screen was inspected for contamination and it had some metal particles in the screen. The cam shaft and tappets indicated various stages of spalling, some advanced. Rust was noted inside all cylinder walls and all the connecting rods had surface rust on them. The number six connecting rod was black in color, and the number four and five connecting rods were blued and not free to move. The number five connecting rod bearing was burnished and heat distressed.

The pilot reported that the airplane was flown about 75 hours a year. Oil was changed on the airplane about three times a year. The oil filter was not opened during the oil changes to inspect for metal contamination. The pilot reported that he was unaware that the engine oil filter indicated that the oil system was contaminated with metal particles.

Pilot Information

Certificate:	Private	Age:	48, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	05/22/1996
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	1568 hours (Total, all aircraft), 848 hours (Total, this make and model), 1508 hours (Pilot In Command, all aircraft), 12 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N9004W
Model/Series:	PA-28-235 PA-28-235	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	28-10585
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	02/24/1996, Annual	Certified Max Gross Wt.:	2900 lbs
Time Since Last Inspection:	70 Hours	Engines:	1 Reciprocating
Airframe Total Time:	2321 Hours	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	O-540 B4B5
Registered Owner:	WILLIAM B. SEVENBERGEN	Rated Power:	235 hp
Operator:	WILLIAM B. SEVENBERGEN	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	DSM, 990 ft msl	Distance from Accident Site:	10 Nautical Miles
Observation Time:	1854 CST	Direction from Accident Site:	180°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	10 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	11 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	150°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	15° C / 2° C
Precipitation and Obscuration:			
Departure Point:	(Y76)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	1730 CST	Type of Airspace:	Class E

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	JIM SILLIMAN	Report Date:	09/05/1997
Additional Participating Persons:	EUGENE LAWSON; DES MOINES, IA GREG ERIKSON; WAYNE, IL		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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