



National Transportation Safety Board Aviation Accident Final Report

Location:	Winamac, IN	Accident Number:	CHI03LA187
Date & Time:	07/02/2003, 1008 CDT	Registration:	N6315P
Aircraft:	Piper PA-24	Aircraft Damage:	Substantial
Defining Event:		Injuries:	5 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The airplane was damaged during a forced landing in a rough plowed field following a loss of engine power during cruise flight. Examination of the engine revealed that the crankshaft gear retaining bolt was missing and the gear's anti-rotation pin was sheared. The oil pan of the engine was examined and no bolt was found. The crankshaft gear retaining bolt was not found within the engine. A review of the maintenance records revealed that the engine was last overhauled on April 6, 1986, and had accumulated 522 hours time in service since the overhaul. No subsequent logbook entries were noted that indicated removal of the crankshaft gear or retaining bolt.

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 improper installation of the crankshaft gear due to the omission of the retaining bolt and subsequent shear failure of the anti-rotation pin. The unsuitable terrain encountered, and the rough field were factors.

Findings

Occurrence #1: LOSS OF ENGINE POWER

Phase of Operation: CRUISE

Findings

1. (C) ENGINE ASSEMBLY, TIMING GEAR - NOT SECURED
2. (C) MAINTENANCE, INSTALLATION - IMPROPER - OTHER MAINTENANCE PERSONNEL
3. (C) ENGINE ASSEMBLY, OTHER - SHEARED

Occurrence #2: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: EMERGENCY LANDING

Findings

4. (F) TERRAIN CONDITION - ROUGH/UNEVEN
5. (C) UNSUITABLE TERRAIN OR TAKEOFF/LANDING/TAXI AREA - ENCOUNTERED

Factual Information

On July 2, 2003, at 1008 central daylight time, a Piper PA-24, N6315P, piloted by an airline transport pilot, sustained substantial damage during a forced landing following an in-flight loss of engine power near Winamac, Indiana. Visual meteorological conditions prevailed at the time of the accident. The pilot and his four passengers reported no injuries. The 14 CFR Part 91 personal flight was operating on an IFR flight plan. The flight departed from Plymouth, Michigan, at 0819, with an intended destination of Perryville, Missouri.

The airplane's engine stopped producing power during cruise flight. The pilot was given radar vectors to the Arens Field Airport (RWN), Winamac, Indiana. The pilot was not able to reach RWN and executed a forced landing in a rough plowed field.

A postaccident examination was conducted by the Federal Aviation Administration. During the initial examination of the airplane's engine, valve train continuity could not be established. Rotation of the crankshaft produced no movement of the valve train components. A subsequent examination of the accessory section of the engine revealed that the crankshaft gear retaining bolt was missing and the gear's anti-rotation pin was sheared. The oil pan of the engine was examined and no bolt was found. The crankshaft gear retaining bolt was not found within the engine.

A review of the maintenance records revealed that the engine was last overhauled on April 6, 1986, and had accumulated 522 hours time in service since the overhaul. No subsequent logbook entries were noted that indicated removal of the crankshaft gear or retaining bolt.

Pilot Information

Certificate:	Airline Transport; Flight Instructor	Age:	30, Male
Airplane Rating(s):	Multi-engine Land; 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):	Airplane Multi-engine; Airplane Single-engine	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	01/29/2003
Occupational Pilot:		Last Flight Review or Equivalent:	02/26/2003
Flight Time:	2895 hours (Total, all aircraft), 56 hours (Total, this make and model), 2492 hours (Pilot In Command, all aircraft), 152 hours (Last 90 days, all aircraft), 67 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N6315P
Model/Series:	PA-24	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	24-1425
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	11/19/2002, Annual	Certified Max Gross Wt.:	2550 lbs
Time Since Last Inspection:	121 Hours	Engines:	1 Reciprocating
Airframe Total Time:	3552 Hours as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	O-360
Registered Owner:	On file	Rated Power:	180 hp
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	VPZ, 771 ft msl	Distance from Accident Site:	28 Nautical Miles
Observation Time:	0953 EDT	Direction from Accident Site:	270°
Lowest Cloud Condition:	Clear	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	3 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	20°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.95 inches Hg	Temperature/Dew Point:	27°C / 15°C
Precipitation and Obscuration:			
Departure Point:	PLYMOUTH, MI (1D2)	Type of Flight Plan Filed:	IFR
Destination:	Perryville, MO (K02)	Type of Clearance:	None
Departure Time:	0919 EDT	Type of Airspace:	Class E

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	4 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	5 None	Latitude, Longitude:	41.093333, -86.655556

Administrative Information

Investigator In Charge (IIC): John Brannen **Report Date:** 03/02/2004

Additional Participating Persons: Dan Sedberry; FAA- South Bend FSDO; South Bend, IN

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/>.

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).