



National Transportation Safety Board Aviation Accident Final Report

Location:	ALMYRA, AR	Accident Number:	FTW01LA018
Date & Time:	11/01/2000, 1405 CST	Registration:	N8710W
Aircraft:	Piper PA-28-235	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot reported that the flight was in cruise at 7,000 feet when ' the engine quit without notice, as though the mags had been turned off-no sputtering or gradual loss of engine power.' He executed a forced landing to a field, where the airplane came to rest upright. Postaccident examination of the engine revealed that the upper retaining screw for the crankshaft idler gear had separated. The lower retaining screw remained intact; however, it exhibited excessive wear and the bolt hole for this screw was severely elongated. Metallurgical examination revealed that the upper retaining screw fractured in high stress, low cycle fatigue. The examination further revealed that the upper screw most likely fractured after the lower screw had come loose.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the loss of engine power due to the crankshaft idler gear's loose lower retaining screw, which resulted in the fatigue failure of the crankshaft idler gear's upper retaining screw.

Findings

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

Findings

1. (C) MISCELLANEOUS,BOLT/NUT/FASTENER/CLAMP/SPRING - LOOSE
2. (C) MISCELLANEOUS,BOLT/NUT/FASTENER/CLAMP/SPRING - FATIGUE
3. ACCESSORY DRIVE ASSY,DRIVE GEAR - FAILURE

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

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings

4. TERRAIN CONDITION - OPEN FIELD

Factual Information

On November 1, 2000, at 1405 central standard time, a Piper PA-28-235 airplane, N8710W, was substantially damaged during a forced landing following a total loss of engine power near Almyra, Arkansas. The airplane was registered to Internet-Duncan, Inc, of Duncan, Oklahoma. The commercial pilot, who was the operator of the airplane, sustained serious injuries and his passenger sustained minor injuries. Visual meteorological conditions prevailed and an IFR flight plan was filed for the 14 Code of Federal Regulations Part 91 personal flight. The cross-country flight originated from the Texarkana Regional Airport, Texarkana, Arkansas, at 1250, and was destined for the Tunica Municipal Airport, Tunica, Mississippi.

According to the pilot, the flight departed Texarkana with 84 gallons of fuel and climbed to a cruising altitude of 7,000 feet. He stated that "the engine quit without notice, as though the mags had been turned off-no sputtering or gradual loss of engine power." The pilot declared an emergency to air traffic control (ATC) and attempted to re-start the engine; however, the engine would not re-start. Air traffic control provided the pilot with vectors to the Almyra Municipal Airport, Almyra, Arkansas. Subsequently, the pilot informed ATC that he would be unable to make Almyra and was executing a forced landing in a field. The airplane came to rest upright in the field, one mile north of the Almyra Airport.

The FAA inspector, who examined the airplane at the accident site, reported that the left wing was bent 90 degrees upward at the wing root and the right wing was structurally damaged. Fuel was observed in the right main fuel tank and right wing tip tank. The left main fuel tank and left wing tip tank were compromised. Initial responders to the accident site stated that a "puddle of fuel" was observed beneath the left wing in the area of the main fuel cell. The inspector added that both propeller blades were bent aft and the engine firewall was buckled.

According to the aircraft's maintenance logbooks, the airframe and engine underwent their most recent annual inspection on October 5, 2000, 9.01 flight hours prior to the accident. At the time of the accident, the airframe had accumulated a total of 3,067.51 flight hours and the engine had accumulated a total of 1,635.00 hours since overhaul. No record of open maintenance discrepancies was found in the logbooks.

The Textron Lycoming O-540-B4B5 engine was examined at Dawson's Aircraft, Clinton, Arkansas, by the NTSB Investigator-In-Charge, an FAA Inspector, and a representative from Textron Lycoming. The propeller was rotated by hand and continuity to the accessory gear section was not established. The accessory housing was removed and the gear teeth of crankshaft idler gear were found worn and uneven around the gear's entire circumference. The crankshaft idler gear was removed exposing the gear shaft. The shaft is secured to the engine housing with two 5/16" hexhead screws. The upper retaining screw was separated at the crankcase with one half of the screw remaining in the crankcase. The other half of the screw was found in the oil sump. The lower retaining screw remained intact; however, the bolt hole for the screw was elongated 0.5-inch in width and 1.0-inch in length and the screw was severely worn. The crankshaft idler gear shaft locking plate was found in the oil sump.

The separated upper retaining cap screw, the lower retaining cap screw, the crankshaft idler gear shaft, crankshaft idler gear, and crankshaft idler gear shaft locking plate were sent to the Textron Lycoming Materials Laboratory, Williamsport, Pennsylvania, for examination. The metallurgist determined that "the upper retaining cap screw fractured in high stress low cycle fatigue." The metallurgist further determined that the upper screw "most likely fractured after

the lower retaining cap screw had come loose."

Pilot Information

Certificate:	Commercial	Age:	47, 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:	04/12/2000
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	659 hours (Total, all aircraft), 405 hours (Total, this make and model), 628 hours (Pilot In Command, all aircraft), 33 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N8710W
Model/Series:	PA-28-235 PA-28-235	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	28-10243
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	10/05/2000, Annual	Certified Max Gross Wt.:	2900 lbs
Time Since Last Inspection:	9 Hours	Engines:	1 Reciprocating
Airframe Total Time:	3067 Hours	Engine Manufacturer:	Lycoming
ELT:	Installed, activated, aided in locating accident	Engine Model/Series:	O-540-B4B5
Registered Owner:	INTERNET-DUNCAN, INC.	Rated Power:	235 hp
Operator:	TERRY D. WOMACK	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	SGT, 224 ft msl	Distance from Accident Site:	12 Nautical Miles
Observation Time:	1355 CST	Direction from Accident Site:	360°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	7 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	14 knots / 21 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	190°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	29° C / 13° C
Precipitation and Obscuration:			
Departure Point:	TEXARKANA, AR (TXK)	Type of Flight Plan Filed:	IFR
Destination:	TUNICA, MS (M97)	Type of Clearance:	IFR
Departure Time:	1250 CST	Type of Airspace:	Class E

Airport Information

Airport:	ALMYRA (M73)	Runway Surface Type:	
Airport Elevation:	208 ft	Runway Surface Condition:	
Runway Used:	0	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced Landing

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	JASON A RAGOGNA	Report Date:	07/10/2001
Additional Participating Persons:	JACKIE BROWN; LITTLE ROCK, AR		
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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