



National Transportation Safety Board Aviation Accident Final Report

Location:	Coatesville, PA	Accident Number:	NYC02LA070
Date & Time:	03/02/2002, 1140 EST	Registration:	N65021
Aircraft:	Cessna 172P	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None

Flight Conducted Under: Part 91: General Aviation - Instructional

Analysis

While the student pilot was landing on runway 11, about 5 feet above the runway, a gust of wind was encountered, which lifted the right wing. The left main landing gear touched down and the gear spring twisted. The airplane began to drift to the left, and after the CFI "gave the student a second or two to recover from this position," he took the controls. Continuing to veer, the airplane departed the left side of the runway, where the left main landing gear collapsed. The airplane came to rest in a grass area. The left main landing gear spring was retained for further examination. According to the manufacturers technical report of the examination, the tubular spring for the left main landing gear fractured at the inboard end. The inboard end of the spring contained a longitudinal oriented fracture that intersected a fastener hole. The fracture face contained chevron marks typical of an overstress fracture that pointed back to the hole, indicating that the fracture emanated from the fastener hole. No evidence of corrosion was noted on the fracture region. Further examination revealed that the fastener hole contained machining marks and fretting. Review of the airplane's maintenance records revealed that the landing gear struts were removed from the fuselage, and floats were installed, in 1992. After about 2,158 hours of service, the floats were removed, and the original landing gear struts were re-installed. The airplane had accumulated about 3,598 hours of total service. The CFI reported that the winds at the airport, about the time of the accident, were from 180 degrees at 8 knots, gusting to 17 knots.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The student pilot's loss of aircraft control which resulted in a hard landing, and the CFI's delayed remedial action. Factors related to the accident were the fatigue cracks which initiated at the attachment hole on the landing gear strut, and the crosswind conditions.

Findings

Occurrence #1: HARD LANDING

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

1. (F) LANDING GEAR,MAIN GEAR STRUT - FATIGUE
2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
3. (F) WEATHER CONDITION - CROSSWIND
4. (C) REMEDIAL ACTION - DELAYED - PILOT IN COMMAND(CFI)

Occurrence #2: LOSS OF CONTROL - ON GROUND/WATER

Phase of Operation: LANDING - ROLL

Occurrence #3: GEAR COLLAPSED

Phase of Operation: LANDING - ROLL

Factual Information

On March 2, 2002, about 1140 eastern standard time, a Cessna 172P, N65021, was substantially damaged while landing at the Chester County Airport, Coatesville, Pennsylvania. The certified flight instructor (CFI) and student pilot were not injured. Visual meteorological conditions prevailed and no flight plan was filed for the instructional flight conducted under 14 CFR Part 91.

According to the CFI, the student was landing on runway 11, a 5,400-foot long, 100-foot wide, asphalt runway. About 5 feet above the runway, a gust of wind was encountered, which lifted the right wing. The left main landing gear touched down, and the gear spring twisted. The airplane began to drift to the left, and after the CFI "gave the student a second or two to recover from this position," he took the controls. Continuing to veer, the airplane departed the left side of the runway, where the left main landing gear collapsed. The airplane came to rest in a grass area.

The left main landing gear spring was retained for further examination at the Cessna Aircraft Company Materials Laboratory.

According to the manufacturer's technical report of the examination, the tubular spring for the left main landing gear fractured at the inboard end. The inboard end of the spring contained a longitudinal oriented fracture that intersected a fastener hole. The fracture face contained chevron marks typical of an overstress fracture that pointed back to the hole, indicating that the fracture emanated from the fastener hole. The overstress fracture region extended for about 3.5 inches from the hole. No evidence of corrosion was noted on the fracture region. Further examination of the fastener hole revealed that it contained machining marks and fretting. The composition and hardness of the material used to produce the spring were within manufacturer specifications.

Review of the airplane's maintenance records revealed that the landing gear struts were removed from the fuselage, and floats were installed, in 1992. After about 2,158 hours of service, the floats were removed, and the original landing gear struts were re-installed. The airplane had accumulated about 3,598 hours of total service.

The winds recorded at a nearby airport, at 1154, were from 150 degrees at 10 knots. The CFI reported that the winds at 40N, about the time of the accident, were from 180 degrees at 8 knots, gusting to 17 knots.

Flight Instructor Information

Certificate:	Flight Instructor; Commercial	Age:	26, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Single-engine; Instrument Airplane	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	04/26/2002
Occupational Pilot:		Last Flight Review or Equivalent:	09/29/2001
Flight Time:	2546 hours (Total, all aircraft), 600 hours (Total, this make and model), 2425 hours (Pilot In Command, all aircraft), 150 hours (Last 90 days, all aircraft), 50 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Student Pilot Information

Certificate:	Student	Age:	58, Male
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	06/29/2001
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	35 hours (Total, all aircraft), 35 hours (Total, this make and model), 15 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N65021
Model/Series:	172P	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	17275670
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	02/15/2002, Annual	Certified Max Gross Wt.:	2650 lbs
Time Since Last Inspection:	20 Hours	Engines:	1 Reciprocating
Airframe Total Time:	3577 Hours at time of accident	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	O-329-D2J
Registered Owner:	David Marvin	Rated Power:	160 hp
Operator:	David Marvin	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	PHL, 38 ft msl	Distance from Accident Site:	30 Nautical Miles
Observation Time:	1154 EST	Direction from Accident Site:	120°
Lowest Cloud Condition:	Few / 11000 ft agl	Visibility	10 Miles
Lowest Ceiling:	Overcast / 20000 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	10 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	150°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.53 inches Hg	Temperature/Dew Point:	10° C / -3° C
Precipitation and Obscuration:			
Departure Point:	West Chester, PA (N99)	Type of Flight Plan Filed:	None
Destination:	Cotesville, PA (40N)	Type of Clearance:	None
Departure Time:	1100 EST	Type of Airspace:	Class G

Airport Information

Airport:	Chester County (40N)	Runway Surface Type:	Asphalt
Airport Elevation:	660 ft	Runway Surface Condition:	Dry
Runway Used:	11	IFR Approach:	None
Runway Length/Width:	5400 ft / 100 ft	VFR Approach/Landing:	Full Stop; Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	39.983056, -75.866389

Administrative Information

Investigator In Charge (IIC):	Stephen M Demko	Report Date:	06/25/2003
Additional Participating Persons:	Edward Coudon; FAA; Philadelphia, PA		
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.ntsbt.gov/pubdms/ .		

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