



Aviation Investigation Final Report

Location:	Greenville, South Carolina	Accident Number:	ATL04LA092
Date & Time:	April 8, 2004, 14:41 Local	Registration:	N527ST
Aircraft:	Cessna 140	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was cleared to land and went through his approach check with everything normal. The airplane crossed over the landing threshold and settled onto the runway in a three point landing attitude. During the landing roll, the pilot felt the left wing start to dip and the airplane vibrating. The airplane turned approximately 20-degrees to the right, the left front side struck the runway and the airplane came to a stop. The pilot had completed a series of touch and go landings, and during the accident landing, the leaf spring landing gear assembly broke. Examination revealed that the leaf spring gear strut fracture stemmed from an area of fatigue cracking that initiated at the upper forward side of the inboard hole for the step attachment bolts. Given the observed corrosion in the bolt hole, it was determined that the fatigue originated from corrosion pitting. For fatigue to initiate at the upper side of the spring strut, the upper side must have been placed in tension. According to the aircraft maintenance logbook for the 1946 built airplane, the leaf spring gear assembly and the total airframe time was 3,375 hours.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Fatigue failure of the leaf spring gear strut.

Findings

Occurrence #1: GEAR COLLAPSED
Phase of Operation: LANDING - ROLL

Findings

1. (C) LANDING GEAR,MAIN GEAR SPRING - FATIGUE

Factual Information

On April 8, 2004, at 1441 eastern daylight time, a Cessna 140, N527ST, registered to and operated by a private pilot, main landing gear collapsed during landing on runway 19 at Greenville Downtown Airport, Greenville, South Carolina. The personal flight operated under the provisions of Title 14 CFR Part 91. Visual meteorological conditions prevailed at the time and no flight plan was filed. The airplane was substantially damaged and the private pilot received no injuries. The flight departed Oconee County Regional Airport, Clemson, South Carolina, on April 8, 2004 at 1315.

During the personal flight, the pilot made initial contact with the Greenville Downtown Airport tower six miles from the airport and was given instructions to enter the right downwind for runway 19. The pilot was cleared to land and went through his approach checklist with everything normal. The airplane crossed over the landing threshold and settled onto the runway in a three point landing attitude. During landing roll, the pilot felt the left wing start to dip and the airplane vibrating. The airplane turned approximately 20-degrees to the right, the left front side struck the runway and the airplane came to a stop.

The pilot had completed a series of touch and go landings, and during the accident landing, the leaf spring gear assembly broke. The fracture faces were removed and preserved for further examination. Further examination revealed that the leaf spring gear strut fracture stemmed from an area of fatigue cracking that initiated at the upper forward side of the inboard hole for the step attachment bolts. Given the observed corrosion in the bolt hole, it was determined that the fatigue originated from corrosion pitting. For fatigue to initiate at the upper side of the spring strut, the upper side must have been placed in tension. According to the aircraft maintenance logbook for the 1946 built airplane, the leaf spring gear assembly and the total airframe time was 3,375 hours.

Pilot Information

Certificate:	Private	Age:	43, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	May 23, 2002
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	May 23, 2002
Flight Time:	530 hours (Total, all aircraft), 109 hours (Total, this make and model), 429 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N527ST
Model/Series:	140	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	8527
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	June 9, 2003 Annual	Certified Max Gross Wt.:	1450 lbs
Time Since Last Inspection:	116 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	3375 Hrs as of last inspection	Engine Manufacturer:	Continental
ELT:	Not installed	Engine Model/Series:	C-85-12F
Registered Owner:	Edward M Spinelli	Rated Power:	85 Horsepower
Operator:		Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KGMU,1048 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	14:53 Local	Direction from Accident Site:	0°
Lowest Cloud Condition:	Few / 4700 ft AGL	Visibility	10 miles
Lowest Ceiling:		Visibility (RVR):	
Wind Speed/Gusts:	7 knots / 0 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	230°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.67 inches Hg	Temperature/Dew Point:	19°C / 11°C
Precipitation and Obscuration:			
Departure Point:	Clemson, SC (CEU)	Type of Flight Plan Filed:	None
Destination:	Greenville, SC (GMU)	Type of Clearance:	None
Departure Time:	14:40 Local	Type of Airspace:	Class C

Airport Information

Airport:	Greenville Downtown Airport KGMU	Runway Surface Type:	Asphalt
Airport Elevation:	1048 ft msl	Runway Surface Condition:	Dry
Runway Used:	19	IFR Approach:	None
Runway Length/Width:	5400 ft / 100 ft	VFR Approach/Landing:	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	34.847778,-82.349998

Administrative Information

Investigator In Charge (IIC):	Powell, Phillip
Additional Participating Persons:	Charlie Henderson; Columbia FSDO-13
Original Publish Date:	April 28, 2005
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=59042

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