



National Transportation Safety Board Aviation Accident Final Report

Location:	Wurtsboro, NY	Accident Number:	ERA17LA298
Date & Time:	08/27/2017, 1530 EDT	Registration:	N1834
Aircraft:	CESSNA 305	Aircraft Damage:	Substantial
Defining Event:	Part(s) separation from AC	Injuries:	1 Minor
Flight Conducted Under:	Part 91: General Aviation - Other Work Use		

Analysis

After completing five glider tow flights, the commercial pilot landed the airplane on the turf runway. During the landing roll, the left main landing gear wheel separated from the axle; the airplane nosed over and came to rest inverted, which resulted in substantial damage to the rudder and wings.

Postaccident examination revealed that the axle of the left main landing gear assembly was fractured near the end that would have been attached to the landing gear strut. There were two opposing fatigue regions on the fracture surface separated by an overstress region. The first fatigue region had a shiny appearance consistent with recontact of the fracture surfaces. The second fatigue region exhibited a more matte appearance and covered a larger area than the first region. In addition, the tread of the rubber tire exhibited a wear pattern that was not centered but instead had shifted toward the shoulder.

It is possible that the axle had a crack for an unknown amount of time, then was reassembled 180° rotated when it began to fatigue again on the opposing side. As a result of the canting of the wheel because of the larger fatigue crack, the wear pattern of the tire shifted from the centerline to the shoulder of the tire. According to the maintenance records, the most recent annual inspection was performed about 12 months before the accident, which would have been the most recent time the landing gear system was completely examined. Since the origination time of the crack is unknown, the investigation could not determine if the mechanic performing the most recent annual inspection would have been able to see and identify the fatigue fracture.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

A fatigue fracture of the left main landing gear axle.

Findings

Aircraft

Main gear strut/axle/truck - Fatigue/wear/corrosion (Cause)

Main gear strut/axle/truck - Failure (Cause)

Factual Information

On August 27, 2017, about 1530 eastern daylight time, a Cessna 305A, N1834, was substantially damaged during the landing roll at Wurtsboro- Sullivan County Airport (N82), Wurtsboro, New York. The commercial pilot sustained minor injuries. The airplane was registered to and operated by a corporation as a Title 14 *Code of Federal Regulations* Part 91 glider tow flight. Visual meteorological conditions prevailed at the time of the accident, and no flight plan was filed for the local flight.

According to the pilot, he completed five glider tow flights prior to the accident flight. After he landed on a turf runway, during the landing roll, the pilot noticed a "severe vibration." Next, the airplane stopped, nosed over, and came to rest inverted on the turf runway.

During the accident sequence, the wings and rudder were substantially damaged. In addition, the left main landing gear wheel had separated from the axle.

According to Federal Aviation Administration records, the airplane was manufactured in 1964. It was equipped with a Continental Motors Inc. O-470 series engine, a 213-hp, engine. According to the airframe maintenance logbook, the most recent annual inspection was performed on September 3, 2016, at a total time of 4,677.8 hours. At that time, it was "found to be in airworthy condition."

An examination of the left main landing gear wheel axle by the National Transportation Safety Board Materials Laboratory revealed that the axle of the left main landing gear assembly was fractured near the end that would have been attached to the landing gear strut. Examination of the fracture surface using a stereo microscope revealed fracture features consistent with a fatigue fracture. There were two opposing fatigue regions on the fracture surface separated by an overstress region. The first fatigue region had a shiny appearance consistent with recontact of the fracture surfaces. The second fatigue region exhibited a more matte appearance and covered a larger area than the first region. In addition, the tread of the rubber tire exhibited a wear pattern that was not centered but instead had shifted towards the shoulder.

According to Part 43 Appendix D – Scope and Detail of Items (as Applicable to Particular Aircraft) To Be Included in Annual and 100-Hour inspections, "each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the landing gear group:

- 1) All units – for poor condition and insecurity of attachment.
- 3) Linkages, trusses, and members – for undue or excessive wear fatigue, and distortion.
- 7) Wheels – for cracks, defects, and condition of bearings.
- 8) Tires – for wear and cuts."

History of Flight

Landing-landing roll	Landing gear collapse Part(s) separation from AC (Defining event) Nose over/nose down
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Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	78, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	Seat Occupied:	Unknown
Other Aircraft Rating(s):	Glider	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine	Toxicology Performed:	No
Medical Certification:	Class 2	Last FAA Medical Exam:	04/01/2017
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	Registration:	N1834
Model/Series:	305 A	Aircraft Category:	Airplane
Year of Manufacture:	1964	Amateur Built:	No
Airworthiness Certificate:	Utility	Serial Number:	2006
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	09/03/2016, Annual	Certified Max Gross Wt.:	2101 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	4677.8 Hours as of last inspection	Engine Manufacturer:	CONT MOTOR
ELT:		Engine Model/Series:	O-470 SERIES
Registered Owner:	WACO TRANSPORT BUSINESS TRUST	Rated Power:	213 hp
Operator:	WACO TRANSPORT BUSINESS TRUST	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	MGJ, 365 ft msl	Distance from Accident Site:	10 Nautical Miles
Observation Time:	1554 EDT	Direction from Accident Site:	121 °
Lowest Cloud Condition:	Few / 6000 ft agl	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	40°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.23 inches Hg	Temperature/Dew Point:	24° C / 10° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Wurtsboro, NY (N82)	Type of Flight Plan Filed:	None
Destination:	Wurtsboro, NY (N82)	Type of Clearance:	None
Departure Time:	EDT	Type of Airspace:	

Airport Information

Airport:	WURTSBORO-SULLIVAN COUNTY (N82)	Runway Surface Type:	Grass/turf
Airport Elevation:	548 ft	Runway Surface Condition:	Dry; Vegetation
Runway Used:	05	IFR Approach:	None
Runway Length/Width:	3591 ft / 60 ft	VFR Approach/Landing:	Full Stop; Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	41.596667, -74.461389 (est)

Administrative Information

Investigator In Charge (IIC):	Heidi Kemner	Report Date:	02/11/2020
Additional Participating Persons:	Wally Gordon-Tennant; FAA/FSDO; Albany, NY		
Publish Date:	02/11/2020		
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=95910		

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](#).