



Aviation Investigation Final Report

Location:	Jackson, California	Accident Number:	WPR17LA051
Date & Time:	January 6, 2017, 17:20 Local	Registration:	N71RC
Aircraft:	Cessna 421C	Aircraft Damage:	Substantial
Defining Event:	Landing gear collapse	Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airline transport pilot reported that, during the landing roll at the end of a cross-country flight, when he attempted to lightly apply the brakes, the airplane began to yaw from side to side. The airplane subsequently exited the right side of the runway and sustained substantial damage to the right wing spar. During the landing, the right main landing gear collapsed. An on-site examination revealed that the right main landing gear torque link assembly had separated at the hinge attach point due to the failure of the torque link bolt. Although the bolt was located at the accident site, the bolt's nut, cotter pin, and washer were missing. Further examination revealed that the torque link bolt threads had been rounded over and exhibited remnants of material consistent with the threads of the mating nut. In addition, remnants of the cotter pin that was installed through the bolt hole were visible. The sheared cotter pin and threads from the nut that remained within the bolt threads suggest that the torque link bolt/nut assembly was overloaded, which resulted in the landing gear collapse.

A Federal Aviation Administration special airworthiness information bulletin had been issued about 3 years before the accident to advise owners, operators, and maintenance technicians of the make and model airplane of the need to inspect the main landing gear torque link assembly to ensure the correct thickness of washers and to ensure that the washers are installed properly, and a Cessna service bulletin had also been issued previously regarding the washers. However, no maintenance records were available to determine the airplane's maintenance history or compliance with the applicable bulletins.

Probable Cause and Findings

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

The failure of the right main landing gear torque link bolt in overstress, which resulted in the collapse of the landing gear during the landing roll.

Findings

Aircraft	Main landing gear - Failure
Aircraft	Main landing gear - Capability exceeded

Factual Information

History of Flight

Landing-landing roll	Landing gear collapse (Defining event)
Landing-landing roll	Runway excursion
Landing-landing roll	Collision with terr/obj (non-CFIT)

On January 6, 2017, about 1720 Pacific standard time, a Cessna 421C airplane, N71RC, sustained substantial damage to the right wing spar following the collapse of the right main landing gear during the landing roll at Westover Field/Amador County Airport, Jackson, California. The airline transport rated pilot was not injured. The airplane was registered to and operated by the pilot as a Title 14 *Code of Federal Regulations* Part 91 personal flight. Visual meteorological conditions prevailed, and no flight plan was filed for the cross country flight. The flight originated from the Palo Alto Airport, Palo Alto, California about 1640.

The pilot stated that he flew a normal left-hand traffic pattern for runway 19. The flare and initial touchdown were normal, however, immediately after the initial touchdown, something did not feel right. When he attempted to lightly apply the brakes the airplane began to yaw from one side to the other. He released the brakes and attempted to slow the airplane with reverse thrust, but the airplane exited the paved runway surface and came to a stop in the grass and dirt area about 20 ft off the right side of the runway. During the landing the right main landing gear collapsed.

An onsite examination of the airplane revealed that the right main landing gear torque link assembly had separated at the hinge attach point due to the failure of the torque link bolt. The bolt's nut, cotter pin and washer were not located during the investigation.

The subject bolt was subsequently shipped to the National Transportation Safety Board's Materials Laboratory in Washington, D.C. for examination. As a result of the examination, the report revealed that the torque link bolt threads had been rounded over and exhibited remnants of material consistent with the threads of the mating nut. Further, remains of a cotter pin that was installed through the bolt hole were also visible. The report concluded that the deformation of the cotter pin remains was indicative of a shear overstress fracture. (Refer to the NTSB Materials Laboratory Factual Report No. 18-062, which is appended to the docket for this report.)

It was revealed during the investigation that Federal Aviation Administration (FAA) Special Airworthiness Information Bulletin (SAIB) CE-14-19, dated May 30, 2014, titled "Landing Gear; Main Landing Gear (MLG) Torque Link," was published to advise owners, operators, and maintenance technicians of Cessna 300 and 400 Models and Series of an airworthiness concerns, specifically the need to inspect the MLG torque link assembly to ensure the correct thickness washers are installed, and to ensure the washers are installed properly. The SAIB was preceded by Cessna Service Bulletin ME83-37, dated November 23, 1983, "Main Landing Gear Scissor Washer Replacement which recommended replacement of the two outer washers on the main landing gear scissor link for Cessna Model 421s, and

Cessna Service Bulletin MEB02-12, which specified replacement of the original washers at each end of hinge point attachment stack-up for Cessna Model 310s. (Refer to FAA SAIB CE-14-9, and Cessna Service Bulletin ME83-37, both of which are appended to the docket for this report.)

Except for the right main landing gear torque link bolt, no other components of the right main landing gear assembly were accounted for during the investigation. Additionally, no maintenance records were recovered during the investigation for review to determine compliance with the SAIB's.

The pilot did not submit a Pilot/Operator Aircraft Accident/Incident Report (NTSB) Form 6120.1.

Pilot Information

Certificate:	Airline transport	Age:	58,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	4-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	December 11, 2015
Occupational Pilot:	No	Last Flight Review or Equivalent:	September 4, 2016
Flight Time:	1802 hours (Total, all aircraft), 62 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N71RC
Model/Series:	421C C	Aircraft Category:	Airplane
Year of Manufacture:	1977	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	421C0423
Landing Gear Type:	Retractable - Tricycle	Seats:	
Date/Type of Last Inspection:	August 11, 2016 AAIP	Certified Max Gross Wt.:	7500 lbs
Time Since Last Inspection:	11 Hrs	Engines:	2 Turbo prop
Airframe Total Time:	2929.1 Hrs as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Installed	Engine Model/Series:	LTP 101-600
Registered Owner:	On file	Rated Power:	600 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Dusk
Observation Facility, Elevation:	KSMF, 23 ft msl	Distance from Accident Site:	42 Nautical Miles
Observation Time:	00:53 Local	Direction from Accident Site:	297°
Lowest Cloud Condition:	Scattered / 15000 ft AGL	Visibility	10 miles
Lowest Ceiling:	Broken / 25000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	4 knots / None	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	10°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.1 inches Hg	Temperature/Dew Point:	4°C / 2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Palo Alto, CA (PAO)	Type of Flight Plan Filed:	Unknown
Destination:	Jackson, CA (JAQ)	Type of Clearance:	None
Departure Time:	16:40 Local	Type of Airspace:	Class G

Airport Information

Airport:	WESTOVER FIELD AMADOR COUNTY JAQ	Runway Surface Type:	Asphalt
Airport Elevation:	1694 ft msl	Runway Surface Condition:	Dry
Runway Used:	19	IFR Approach:	None
Runway Length/Width:	3401 ft / 60 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:	38.376945,-120.794166(est)

Administrative Information

Investigator In Charge (IIC):	Shaver, Christopher
Additional Participating Persons:	Cholena Devlin; FAA Sacramento FSDO; Sacramento, CA Dennis DeGolia; Federal Aviation Administration; Sacramento, CA Peter Basile; Textron Aviation; Wichita, KS
Original Publish Date:	November 19, 2019
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=94575

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