Aviation Investigation Final Report

Location:	Georgetown, California	**Accident Number:**	WPR23LA021
Date & Time:	October 20, 2022, 10:10 Local	**Registration:**	N55DC
Aircraft:	Cessna 140	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

After the pilot reduced the engine speed to idle while landing, the main landing gear touched down and the airplane bounced. The pilot then floated the airplane down the runway to decelerate the airspeed. The airplane touched down again in a nose high attitude then veered off the left side of the runway. The pilot applied full power to abort the landing, but the airplane continued off the left side of the runway and contacted vegetation before proceeding down a slope, which resulted in substantial damage to the left aileron and left horizontal stabilizer. The right main landing gear leg also separated from the airplane and came to rest in the debris path.

Postaccident examination of the landing gear assembly revealed that the right main landing gear leg was normally secured to a support assembly within the airframe by a bolt, washer, and nut. The bolt remained attached with its associated hardware, but the bolthead had fractured in overstress. In addition, there was downward deformation at the lower support of the main landing gear support assembly, likely due to an exceedance of the yield strength of the metal and consistent with overload separation. As the bolt and damaged area of the support assembly are designed to transfer the landing gear loads directly to the airframe, the evidence in this case suggests that the right main landing gear support assembly failed as the result of the pilot's failure to maintain directional control during an attempted go-around, which resulted in runway excursion and a separation of the right main landing gear.

Probable Cause and Findings

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

The pilot’s failure to maintain control during an attempted go-around, which resulted in a runway excursion and a separation of the right main landing gear.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Main landing gear - Capability exceeded
Aircraft	(general) - Not attained/maintained

Factual Information

History of Flight

Takeoff-rejected takeoff	Loss of control in flight (Defining event)

On October 20, 2022, about 1010 Pacific daylight time, a Cessna 140 airplane, N55DC, was substantially damaged when it was involved in an accident near Georgetown, California. The pilot was not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The student pilot reported he was returning from a 1-hour local practice flight when the accident occurred. He noted that the weather was clear, and wind was calm at the time. The pilot entered the downwind leg of the airport traffic pattern at 1,000 ft above ground level on a 45° entry for runway 16. He set the throttle, trim, and flaps for landing and maintained 65-70 mph while he flew a stable approach to the runway.

As the pilot crossed the runway numbers, he reduced the engine speed to IDLE with the airspeed at 65 mph and landed on the runway centerline. When the main landing gear first touched down the airplane bounced, and the pilot floated the airplane down the runway to decelerate. During the landing roll following the second touchdown, the right wing banked upward at a 30°- 40° angle. The pilot reported that neither touchdown was hard. He applied full right aileron but was unable to level the wings. The airplane began to veer left on the runway and the pilot applied full power to abort the landing. The airplane veered off the left side of the runway, the left wing contacted vegetation, and the airplane spun 180° before it came to rest. The right main gear leg and wheel separated and came to rest in vegetation before a slope about 70 ft from the airplane.

In his statement the pilot reported no issues with the flight controls, but in reference to any mechanical failures he noted that he was uncertain:

“the right main gear leg and wheel separated and were approx 70 feet from the plane still on the edge of the runway. That could have caused the right wing to abruptly raise or it was from a freak gust of wind at the wrong time. I don't know if the gear separation was from an attachment failure or the accident itself.”

According to the airplane parts manual, the main landing gear legs bolt to the fuselage airframe structure with a bolt, washer, and a nut. (See figure 1).

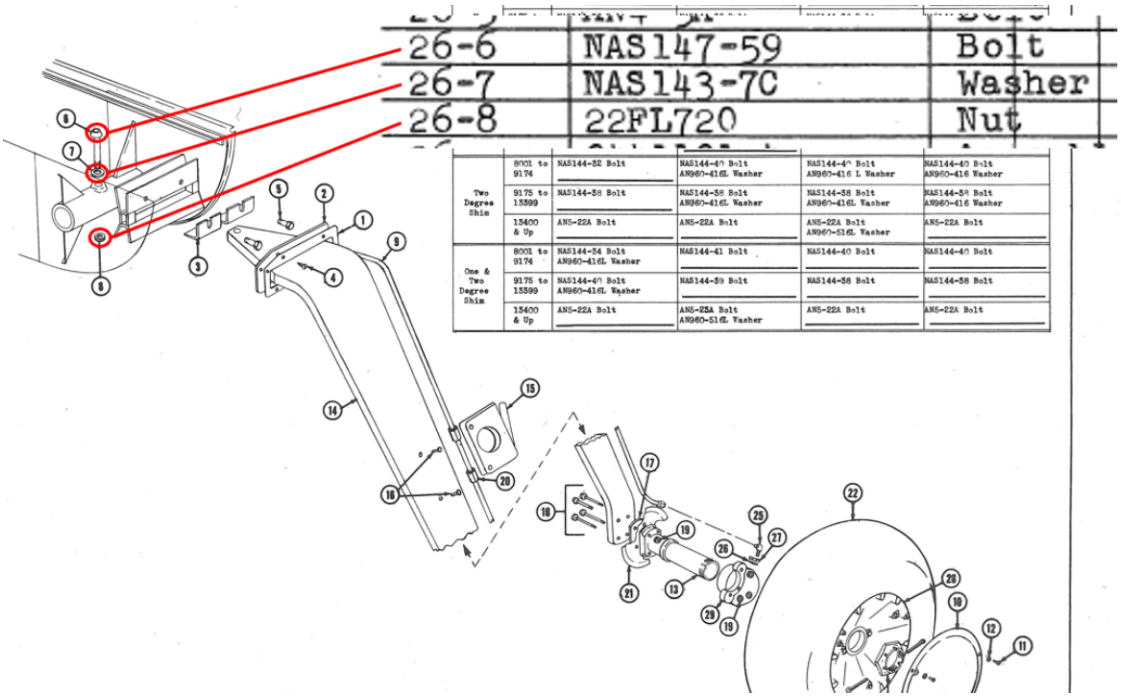

Figure 1: Excerpt of main landing gear drawing from parts manual

The landing gear bolt remained inside the bolt hole along with its associated hardware, including the nut and washer at the fuselage primary structure. The bolt head separated and was not located. In addition, a portion of the landing gear support assembly was fractured and partially separated.

Figure 2: Landing gear leg assembly hardware on accident airplane

A National Transportation Safety Board materials laboratory examination revealed that the fracture features of the bolt were consistent with ductile overstress from a shear overload. No evidence of preexisting damage was observed. The forward end of the landing gear support assembly outboard attachment was fractured at 2 locations on the lower support. The upper side of the lower support was deformed downward near the forward attachment location and the outboard flange was fractured, which appeared to coincide with the downward bend at the upper surface. The downward deformation at the forward end of the lower support is consistent with wheel loading in the aft direction, and the deformation suggests the applied load was sufficient to produce stresses that exceeded the yield strength of the material.

Pilot Information

Certificate:	Student	**Age:**	57,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	October 30, 2020
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	July 24, 2022
Flight Time:	81 hours (Total, all aircraft), 39 hours (Total, this make and model), 24 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N55DC
Model/Series:	140	**Aircraft Category:**	Airplane
Year of Manufacture:	1946	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	11395
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	April 20, 2022 Annual	**Certified Max Gross Wt.:**	1450 lbs
Time Since Last Inspection:	12 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	5332.95 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	C91A installed, not activated	**Engine Model/Series:**	C-85-12F
Registered Owner:	On file	**Rated Power:**	85 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KAUN,1531 ft msl	**Distance from Accident Site:**	10 Nautical Miles
Observation Time:	10:15 Local	**Direction from Accident Site:**	281°
Lowest Cloud Condition:	Clear	**Visibility**	9 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	160°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.04 inches Hg	**Temperature/Dew Point:**	26°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Georgetown, CA (E36)	**Type of Flight Plan Filed:**	None
Destination:	Georgetown, CA	**Type of Clearance:**	None
Departure Time:	09:20 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Georgetown Airport E36	**Runway Surface Type:**	Asphalt
Airport Elevation:	2625 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	16	**IFR Approach:**	None
Runway Length/Width:	2979 ft / 62 ft	**VFR Approach/Landing:**	Full stop

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	38.921111,-120.8648(est)

Administrative Information

Investigator In Charge (IIC):	Stein, Stephen
Additional Participating Persons:	Michael Lenard; Federal Aviation Administration; Sacramento, CA Henry Soderlund; Textron Aviation; Wichita, KS
Original Publish Date:	May 2, 2024
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=106168