Aviation Investigation Final Report

Location:	Independence, Oregon	**Accident Number:**	WPR16LA068
Date & Time:	February 13, 2016, 09:30 Local	**Registration:**	N3625V
Aircraft:	Cessna 140	**Aircraft Damage:**	Substantial
Defining Event:	Sys/Comp malf/fail (non-power)	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot was landing the airplane on a dry, hard-surfaced runway. He stated that the approach and touchdown were normal. Just after touchdown, he felt "something similar to a bump," and the airplane started to drift to the left. He thought that the airplane possibly had a flat tire and tried to compensate with rudder input, but the airplane continued drifting to the left, exited the left side of the runway, and ground looped, resulting in substantial damage to the right wing and fuselage.

An on-scene examination revealed that the left main landing gear axle had fractured, resulting in the separation of the wheel assembly. A detailed examination revealed that the axle was fractured near the inboard end, just outboard of the axle attachment flange. Portions of the fracture surface at the upper and lower sides of the axle had relatively smooth features oriented perpendicular to the outer surface, consistent with fatigue. The fatigue cracks initiated at a fillet corner at a change in the axle's outer diameter.

The manufacturer specified inspection intervals to check for cracks and corrosion of the main landing gear axle; however, the accident airplane's maintenance logs were not located, and the airplane's maintenance history could not be determined.

Probable Cause and Findings

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

The failure of the left main landing gear wheel axle due to a fatigue crack.

Findings

Aircraft	Main gear strut/axle/truck - Failure

Factual Information

History of Flight

Landing-landing roll	Sys/Comp malf/fail (non-power) (Defining event)
Landing-landing roll	Loss of control on ground
Landing-landing roll	Collision with terr/obj (non-CFIT)

On February 13, 2016, about 0930 Pacific standard time, a Cessna 140G airplane, N3625V, sustained substantial damage when the left main landing gear axle broke during landing and the airplane ground looped at the Independence State Airport, Independence, Oregon. The private pilot and one passenger were not injured. The airplane was owned by the pilot and operated as a personal, cross-country flight under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed and no flight plan had been filed for the flight.

In a telephone conversation with the National Transportation Safety Board (NTSB) investigator-in-charge, the pilot stated that the approach and touchdown were normal. Just after touchdown, he felt something similar to a bump, and the airplane started to drift to the left. He stated that he thought that he possibly had a flat tire and tried to compensate, but the airplane continued drifting to the left and exited the left side of the runway into the dirt and ground looped, sustaining substantial damage to the right wing and fuselage.

A Federal Aviation Administration inspector from the Portland Flight Standards District Office was at the airport at the time of the accident and examined the airplane at the accident site. The examination revealed that the left main landing gear axle had fractured and the wheel assembly separated from the airplane.

A detailed examination of the fractured axle by the NTSB materials laboratory revealed that the axle was fractured near the inboard end just outboard of the axle attachment flange. Portions of the fracture surface at the upper and lower sides of the axle had relatively smooth features oriented perpendicular to the outer surface, features consistent with fatigue. The fatigue cracks initiated at a fillet corner at a change in outer diameter for the axle.

According to a representative for Cessna contacted by telephone, inspections of the main landing gear axle should be in accordance with Section 2A of the Maintenance Manual for the 100-series airplanes. The axles should be inspected for cracks and corrosion initially after 10 years or 4,000 hours and then at subsequent intervals of 3 years or 1,000 hours. The inspection consists of removing the wheel and completing a visual inspection. If any crack is suspected, an eddy current inspection is then required.

The airplane was manufactured in 1948. The owner/operator reported that the last annual inspection was completed about 7 months prior to the accident at a total airframe time of 6,314.5 hours. No airframe logbooks were located during the investigation, therefore it was not determined when the last inspection of the main landing gear axle occurred.

Pilot Information

Certificate:	Private	**Age:**	72,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	April 18, 2015
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1360 hours (Total, all aircraft), 1310 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N3625V
Model/Series:	140 G	**Aircraft Category:**	Airplane
Year of Manufacture:	1948	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	14896
Landing Gear Type:	Tailwheel	**Seats:**	
Date/Type of Last Inspection:	July 15, 2015 Annual	**Certified Max Gross Wt.:**	1601 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	6315 Hrs at time of accident	**Engine Manufacturer:**	CONT MOTOR
ELT:	C91 installed, not activated	**Engine Model/Series:**	C90 SERIES
Registered Owner:	On file	**Rated Power:**	90 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:	KSLE,201 ft msl	**Distance from Accident Site:**	9 Nautical Miles
Observation Time:	17:56 Local	**Direction from Accident Site:**	74°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	12 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	170°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.35 inches Hg	**Temperature/Dew Point:**	9°C / 6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Aurora, OR	**Type of Flight Plan Filed:**	None
Destination:	Independence, OR (7S5)	**Type of Clearance:**	VFR
Departure Time:	09:30 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	INDEPENDENCE STATE 7S5	**Runway Surface Type:**	Asphalt
Airport Elevation:	180 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	16	**IFR Approach:**	None
Runway Length/Width:	3142 ft / 60 ft	**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	44.86639,-123.198333(est)

Administrative Information

Investigator In Charge (IIC):	Shaver, Christopher
Additional Participating Persons:	Tony Moore; FAA Portland FSDO; Hillsboro, OR
Original Publish Date:	May 1, 2017
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=92714