



# Aviation Investigation Final Report

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

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## 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

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**Aircraft**

Main gear strut/axle/truck - Failure

## Factual Information

### History of Flight

<b>Landing-landing roll</b>	Sys/Comp malf/fail (non-power) (Defining event)
<b>Landing-landing roll</b>	Loss of control on ground
<b>Landing-landing roll</b>	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

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

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N3625V
<b>Model/Series:</b>	140 G	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1948	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	14896
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	
<b>Date/Type of Last Inspection:</b>	July 15, 2015 Annual	<b>Certified Max Gross Wt.:</b>	1601 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	6315 Hrs at time of accident	<b>Engine Manufacturer:</b>	CONT MOTOR
<b>ELT:</b>	C91 installed, not activated	<b>Engine Model/Series:</b>	C90 SERIES
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	90 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KSLE,201 ft msl	<b>Distance from Accident Site:</b>	9 Nautical Miles
<b>Observation Time:</b>	17:56 Local	<b>Direction from Accident Site:</b>	74°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	12 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	170°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.35 inches Hg	<b>Temperature/Dew Point:</b>	9°C / 6°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Aurora, OR	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Independence, OR (7S5 )	<b>Type of Clearance:</b>	VFR
<b>Departure Time:</b>	09:30 Local	<b>Type of Airspace:</b>	Class G

## Airport Information

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

## Wreckage and Impact Information

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

## Administrative Information

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

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).