Aviation Investigation Final Report

Location:	Coeur D Alene, Idaho	**Accident Number:**	WPR20LA187
Date & Time:	June 18, 2020, 13:45 Local	**Registration:**	N6602B
Aircraft:	Cessna 310	**Aircraft Damage:**	Substantial
Defining Event:	Landing gear collapse	**Injuries:**	3 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane was on final approach for landing, with the landing gear extended, when the landing gear indication light in the cockpit started to flicker. After a few seconds, the light became solid. The pilot visually verified that all three landing gear were extended and then proceeded to land. Upon touchdown, the left main landing gear (MLG) collapsed. The airplane slid off the runway and came to rest in the adjacent field, resulting in substantial damage to the wings.

A postaccident examination of the landing gear system revealed several discrepancies, including missing cotter pins and other hardware, improper tension on the landing gear downlocks, and mis-rigging of the landing gear actuator.

Because the most recent maintenance for the landing gear system was documented 15 days before the accident, it is likely these discrepancies were not addressed during the maintenance (which included a main landing gear wheel, tire, and brake inspection). The most severe discrepancy was likely the mis-rigged condition of the retraction system, which would have allowed the left main landing gear to enter an overcenter position and collapse during landing.

Probable Cause and Findings

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

Improper maintenance of the landing gear system which resulted in a partial gear collapse during landing.

Findings

Personnel issues	(general) - Maintenance personnel
Aircraft	(general) - Failure
Aircraft	(general) - Incorrect service/maintenance

Factual Information

History of Flight

Landing-flare/touchdown	Landing gear collapse (Defining event)

On June 18, 2020, about 1345 Pacific daylight time, a Cessna 310B airplane, N6602B, was substantially damaged when it was involved in an accident at Coeur d'Alene Airport (COE), Coeur d'Alene, Idaho. The pilot was not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that he was on short final with the landing gear extended when the landing gear indication light in the cockpit started to flicker. After a few seconds, the light became solid. The pilot visually verified that all three landing gear were extended and then proceeded to land. Upon touchdown, the left main landing gear (MLG) collapsed. The airplane slid off the runway and came to rest in the adjacent field.

A postaccident examination of the landing gear system revealed several discrepancies. The left MLG torque link was missing cotter pins on the associated castellated nuts. The right MLG torque link center bolt was missing its nut and was backed out from its attachment point (about 2/3 of the way out). The left MLG downlock tension was measured at 11.3 pounds and the right MLG downlock tension was measured at 8.3 pounds (the Cessna 310 Service Manual required a routine maintenance tension of 40-60 pounds). The landing gear actuator appeared to be mis-rigged; the emergency crank was backed off three turns after actuation of the DOWN limit switch (the Cessna 310 Service Manual stated the emergency crank should be backed off two turns after actuation). Finally, the nose landing gear centering mechanism was broken and rusty and the left MLG drive tube was fractured at the actuator attachment lug.

The left MLG drive tube was retained and sent to the NTSB Materials Laboratory for additional examination. The observed features were consistent with fracture of the landing gear drive tube from bending overstress at the end of the inboard clevis shaft. There were no indications of pre-existing fracture features or cracking.

Examination of the maintenance records for the airplane revealed the most recent maintenance for the landing gear system was performed on June 3, 2020 (and included a MLG wheel inspection, tire and brake inspection).

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	30,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	May 8, 2020
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	April 17, 2020
Flight Time:	(Estimated) 403 hours (Total, all aircraft), 43 hours (Total, this make and model), 332 hours (Pilot In Command, all aircraft), 155 hours (Last 90 days, all aircraft), 70 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N6602B
Model/Series:	310 B	**Aircraft Category:**	Airplane
Year of Manufacture:	1958	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	35702
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	March 17, 2020 Annual	**Certified Max Gross Wt.:**	4700 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	O-470 SERIES
Registered Owner:	On file	**Rated Power:**	
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:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	
Precipitation and Obscuration:			
Departure Point:	Coeur D Alene, ID	**Type of Flight Plan Filed:**	None
Destination:	Coeur D Alene, ID	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class E

Airport Information

Airport:	Coeur d'Alene Airport - Pappy Boyington Field COE	**Runway Surface Type:**	Asphalt
Airport Elevation:	2320 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	20	**IFR Approach:**	None
Runway Length/Width:	5400 ft / 75 ft	**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	3 None	**Latitude, Longitude:**	47.589286,-116.910156(est)

Administrative Information

Investigator In Charge (IIC):	Smith, Maja
Additional Participating Persons:	Colby D. Barron; FSDO; Spokane, WA
Original Publish Date:	June 14, 2022
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=101459