Aviation Investigation Final Report

Location:	Kansas City, Missouri	**Accident Number:**	CEN18LA128
Date & Time:	March 22, 2018, 18:00 Local	**Registration:**	N372WP
Aircraft:	Cessna 310R	**Aircraft Damage:**	Substantial
Defining Event:	Landing gear collapse	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airline transport pilot reported that the landing gear position lights were all green during the approach and that the landing was normal. During the landing rollout, the right landing gear collapsed. A witness stated that the landing appeared normal and was not a hard landing. The airplane skidded for about 1,200 to 1,500 ft and veered off the side of the runway, which resulted in substantial damage to the horizontal stabilizer and elevator.

Examination of the airplane's landing gear parts that were broken revealed that the fracture features of the end fitting assembly mating adjustment screw, the bellcrank assembly bolt, and the flange were consistent with overstress. Examination of the fracture surfaces of the end fitting bolt revealed that it had separated through a thread root on the end of the bolt; however, the cause of the end fitting bolt separation could not be determined due to smearing and secondary damage of the fracture surface. Because the witness reported that the landing was not a hard landing, it is unlikely that the failure occurred during the accident landing sequence. It is likely that the separation of the end fitting bolt led to the landing gear collapse.

Probable Cause and Findings

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

The landing gear collapse due to the separation of the end fitting bolt for reasons that could not be determined based on the available evidence.

Findings

Aircraft	Gear extension and retract sys - Failure

Factual Information

History of Flight

Landing-landing roll	Landing gear collapse (Defining event)
Landing-landing roll	Runway excursion

On March 22, 2018, about 1800 central daylight time, a Cessna 310 airplane, N372WP, sustained substantial damage when the right landing gear collapsed during landing roll at the Charles B. Wheeler Downtown Airport (MKC), Kansas City, Missouri. The pilot and passenger were not injured. The airplane was owned and operated by the pilot under the provisions of Title 14 *Code of Federal Regulations* Part 91 on a personal flight. Visual meteorological conditions prevailed for the flight, which was on an instrument flight rules flight plan. The flight departed from the Shreveport Downtown Airport, (DTN), Shreveport, Louisiana, with MKC as the destination airport.

The pilot reported that the landing gear position lights were all green during the approach and the landing was normal. During landing rollout, the right landing gear collapsed. A witness who observed the landing stated that the landing appeared normal and was not a hard landing. After the landing gear collapsed, the airplane skidded for about 1,200 to 1,500 ft and veered off the side of the runway, which resulted in substantial damage to the horizontal stabilizer and elevator.

The airplane's landing gear parts that were broken during the accident were shipped to the National Transportation Safety Board's Materials Laboratory for examination. The parts that were examined included: 1) end fitting bolt with a mating spacer, 2) end fitting assembly with mating adjusting screw, 3) bellcrank assembly bolt with mating nut, and 4) part of a flange.

The examination of the fracture surfaces of the end fitting assembly mating adjustment screw, the bellcrank assembly bolt, and the flange revealed that the fracture features were consistent with overstress. The failure mode of the end fitting bolt could not be determined due to smearing and secondary damage to the fracture surface.

The examination of the fracture surfaces of the end fitting bolt with a mating spacer revealed that it had separated through a thread root on the end of the bolt. The bolt was bent, which prevented easy removal of the mating spacer and bushing. The fracture surface was approximately flat, but significant smearing and secondary damage obscured the finer features. Two crescent-shaped marks on the fracture surface aligned with mounded material on the sides, which was consistent with impact damage. The exact cause of the end fitting bolt separation could not be determined.

Pilot Information

Certificate:	Airline transport	**Age:**	57,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-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:**	January 5, 2018
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	11987 hours (Total, all aircraft), 1890 hours (Total, this make and model), 21 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N372WP
Model/Series:	310R	**Aircraft Category:**	Airplane
Year of Manufacture:	1977	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	310R0904
Landing Gear Type:	Retractable - Tricycle	**Seats:**	
Date/Type of Last Inspection:	Annual	**Certified Max Gross Wt.:**	5501 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	6362 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	C126 installed, not activated	**Engine Model/Series:**	IO-520-MB
Registered Owner:	On file	**Rated Power:**	285 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:	MKC,756 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	16:54 Local	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	120°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.11 inches Hg	**Temperature/Dew Point:**	20°C / 2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Shreveport, LA (DTN)	**Type of Flight Plan Filed:**	IFR
Destination:	Kansas City, MO (MKC)	**Type of Clearance:**	IFR
Departure Time:	14:30 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	Downtown Air MKC	**Runway Surface Type:**	Concrete
Airport Elevation:	756 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	19	**IFR Approach:**	None
Runway Length/Width:	6827 ft / 150 ft	**VFR Approach/Landing:**	Full stop

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:**	39.123054,-94.592781

Administrative Information

Investigator In Charge (IIC):	Silliman, James
Additional Participating Persons:	David Wood; FAA Kansas City FSDO; Kansas City, MO
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.ntsb.gov/Docket?ProjectID=96935