# Aviation Investigation Final Report

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| **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

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| **Aircraft** | Gear extension and retract sys - Failure |

# Factual Information

## History of Flight

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| **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

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| **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

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| **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:** | | **Rated Power:** | 285 Horsepower |
| **Operator:** | On file | **Operating Certificate(s) Held:** | None |

## Meteorological Information and Flight Plan

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| **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

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| **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

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| **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

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| **Investigator In Charge (IIC):** | Silliman, James |
| **Additional Participating Persons:** | David Wood; FAA Kansas City FSDO; Kansas City, MO |
| **Original Publish Date:** | November 19, 2019 |
| **Note:** | The NTSB did not travel to the scene of this accident. |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=96935 |