# Aviation Investigation Final Report

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| **Location:** | Marine City, Michigan | **Accident Number:** | CEN16LA190 |
| **Date & Time:** | May 22, 2016, 16:00 Local | **Registration:** | N20135 |
| **Aircraft:** | Beech C24R | **Aircraft Damage:** | Substantial |
| **Defining Event:** | Sys/Comp malf/fail (non-power) | **Injuries:** | 1 None |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

The pilot was conducting a personal flight when, after takeoff, the right main landing gear did not initially fully retract. The pilot said that, before he could recycle the landing gear, he felt a "thump," and the right landing gear position indictor light turned off (indicating a fully retracted landing gear). Believing the issue had resolved itself, he continued to his planned destination. The pilot reported that, while on landing approach, he selected the landing gear to extend; however, the indicator light for the right main landing gear did not illuminate (indicating an unsafe gear position). He conducted a go-around, and after several unsuccessful attempts to extend the right main landing gear, including an emergency extension, the pilot decided to land with the right main landing gear retracted. The pilot intentionally landed along the right edge of the runway to allow the right wing to drop onto the grass alongside the runway. Upon landing, the right wing contacted the ground, and the airplane swerved off the right side of the runway into a marshy grass area. The right wing and the right side of the stabilator were substantially damaged when they collided with several runway lights during the landing.

Postaccident examination and testing revealed that the right main landing gear was misaligned, which resulted in the tire contacting the aft wheel well fairing during landing gear retraction and extension. The pilot subsequently reported that the airplane had recently been involved in a hard landing, after which the right-side cabin door began to scrape the top of the right wing when it was opened and closed. It is likely that the previous hard landing had resulted in substantial damage to the right wing and the misalignment of the right main landing gear. A review of the airframe maintenance logbook confirmed that landing gear had extended and retracted normally during the last annual inspection. There were no logbook maintenance entries after the last annual inspection.

## Probable Cause and Findings

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

The misalignment of the right main landing gear, which resulted in the failure of the landing gear to retract and extend properly. Also causal was the pilot's failure to have the airplane inspected after a hard landing that had resulted in substantial damage to the right wing.

## Findings

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| **Aircraft** | Gear extension and retract sys - Malfunction |
| **Aircraft** | Main landing gear - Damaged/degraded |
| **Aircraft** | Main landing gear - Not inspected |
| **Personnel issues** | Decision making/judgment - Pilot |
| **Environmental issues** | Sign/marker - Contributed to outcome |

# Factual Information

## History of Flight

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| **Prior to flight** | Miscellaneous/other |
| **Approach-VFR pattern final** | Sys/Comp malf/fail (non-power) (Defining event) |
| **Landing** | Landing gear not configured |
| **Landing-flare/touchdown** | Abnormal runway contact |
| **Landing-flare/touchdown** | Collision with terr/obj (non-CFIT) |

On May 22, 2016, about 1600 eastern daylight time, a Beech C24R airplane, N20135, was substantially damaged while landing at Marine City Airport (76G), near Marine City, Michigan. 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 after takeoff he did not initially observe an indication that the right main landing gear had retracted properly. He stated that before he could recycle the landing gear he felt a "thump" and the right main landing gear position indictor light turned off (indicating a fully retracted landing gear). Believing the issue had resolved itself, he continued to his planned destination. The pilot reported that while on landing approach at 76G, he selected the landing gear to extend; however, the indicator light for the right main landing gear did not illuminate (indicating an unsafe gear position). He advanced engine power and conducted a go-around. His initial thought was that there was a faulty position switch in the landing gear system. He subsequently established that the right main landing gear was not properly extended when he attempted another landing and the right wing dropped after the left main landing gear contacted the runway. He aborted the landing and attempted to cycle the landing gear multiple times while he orbited the airport; however, he never received a safe indication for the right main landing gear. He then attempted the emergency landing gear extension procedure, but still did not observe a safe landing gear indication. Ultimately, he decided to land with the right main landing gear retracted. The pilot intentionally landed along the right edge of the runway to allow the right wing to drop onto the grass alongside the runway. Upon landing, the right wing contacted the ground and the airplane swerved off the right side of the runway into a marshy grass area.

The airplane was examined onsite by a Federal Aviation Administration (FAA) inspector. The right wing and the right side of the stabilator were substantially damaged when they collided with several runway lights during the landing. Additionally, the right main fuel tank ruptured when the right wing collided with a runway edge light post. The right main landing gear was observed retracted in the wheel well at the accident site. Further examination established that the right main landing gear tire was jammed against the aft wheel well fairing, which prevented the landing gear tire from extending out of the wheel well. The landing gear fully extended after an aviation mechanic used a crowbar to dislodge the tire from the aft wheel well fairing.

Several FAA inspectors reexamined the airplane after it was recovered to a hangar. While on jack stands, the right main landing gear tire jammed against the aft wheel well fairing during landing gear retraction and extension. The airplane was equipped with Condor part number (p/n) 26295-B1, 6.00-6 x

17.50 (8 ply) main landing gear tires. The airframe manufacturer's illustrated part catalog specified a 6.00-6 x 17.50 (4 ply) main landing gear tire. Although the airplane was equipped with 8 ply tire treads, instead of the manufacturer-specified 4 ply tire treads, the left main landing gear extended and retracted without binding on the aft wheel fairing. The main landing gear was cycled again after the main tires were swapped from side to side to determine if the right tire was the source of the anomaly. The right tire retracted and extended normally when it was installed on the left main landing gear; however, the left tire bound on the aft wheel well fairing when it was installed on the right main landing gear. Measurements of the right main landing gear shock disks were within the airframe manufacturer's specifications. The FAA inspectors then loosened the right main landing gear shock disc nut about 1 turn to move the gear yoke forward about ½" forward in the gear well, which allowed the right main landing gear to extend and retract without contacting the aft wheel well fairing.

The pilot was re-interviewed by FAA inspectors after their examination of the landing gear retraction system. The FAA inspectors told the pilot that they had found the right main landing gear to be misaligned, which resulted in the tire contacting the aft wheel well fairing. The pilot then told the FAA inspectors that the airplane had been involved in a recent hard landing, after which the right-side cabin door began to scrape the top of the right wing when it was opened and closed.

A review of the airframe maintenance logbook revealed that the airplane had undergone an annual inspection on August 5, 2015, at 5,242.32 total airframe hours. According to the logbook entry, no anomalies were observed with the extension or retraction of the main landing gear during the last annual inspection. There were no additional maintenance logbook entries following the last annual inspection. At the time of the accident, the airplane had accumulated 94.2 hours since the last annual inspection.

## Pilot Information

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| **Certificate:** | Private | **Age:** | 57,Male |
| **Airplane Rating(s):** | Single-engine land; Single-engine sea | **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 28, 2016 |
| **Occupational Pilot:** | No | **Last Flight Review or Equivalent:** | November 7, 2015 |
| **Flight Time:** | (Estimated) 950 hours (Total, all aircraft), 400 hours (Total, this make and model), 950 hours (Pilot In Command, all aircraft), 47 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Beech | **Registration:** | N20135 |
| **Model/Series:** | C24R | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | 1978 | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | MC-604 |
| **Landing Gear Type:** | Retractable - Tricycle | **Seats:** | 4 |
| **Date/Type of Last Inspection:** | August 5, 2015 Annual | **Certified Max Gross Wt.:** | 2750 lbs |
| **Time Since Last Inspection:** | 94 Hrs | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 5336.54 Hrs at time of accident | **Engine Manufacturer:** | LYCOMING |
| **ELT:** | C91A installed, activated, did not aid in locating accident | **Engine Model/Series:** | IO-360-A1B6 |
| **Registered Owner:** | On file | **Rated Power:** | 200 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:** | MTC,579 ft msl | **Distance from Accident Site:** | 12 Nautical Miles |
| **Observation Time:** | 15:58 Local | **Direction from Accident Site:** | 239° |
| **Lowest Cloud Condition:** | Few / 23000 ft AGL | **Visibility** | 10 miles |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 10 knots / | **Turbulence Type Forecast/Actual:** | None / None |
| **Wind Direction:** | 10° | **Turbulence Severity Forecast/Actual:** | N/A / N/A |
| **Altimeter Setting:** | 30.01 inches Hg | **Temperature/Dew Point:** | 20°C / 4°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Kokomo, IN (OKK ) | **Type of Flight Plan Filed:** | None |
| **Destination:** | Marine City, MI (76G ) | **Type of Clearance:** | None |
| **Departure Time:** | 14:00 Local | **Type of Airspace:** | Class G |

## Airport Information

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| **Airport:** | Marine City Airport 76G | **Runway Surface Type:** | Asphalt |
| **Airport Elevation:** | 613 ft msl | **Runway Surface Condition:** | Dry |
| **Runway Used:** | 04 | **IFR Approach:** | None |
| **Runway Length/Width:** | 3100 ft / 60 ft | **VFR Approach/Landing:** | Traffic pattern |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 None | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 None | **Latitude, Longitude:** | 42.721389,-82.596389(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | Fox, Andrew |
| **Additional Participating Persons:** | Patrick D Lusch; Federal Aviation Administration - East Michigan; Belleville, MI<br>Richard D Anderson, Jr.; Federal Aviation Administration - East Michigan; Belleville, MI<br>Wes Shartle; Federal Aviation Administration - East Michigan; Belleville, MI<br>Douglas Peterson; Federal Aviation Administration - East Michigan; Belleville, MI |
| **Original Publish Date:** | June 8, 2020 |
| **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=93225 |