



# Aviation Investigation Final Report

<b>Location:</b>	Latrobe, Pennsylvania	<b>Accident Number:</b>	ERA19LA123
<b>Date &amp; Time:</b>	March 12, 2019, 13:36 Local	<b>Registration:</b>	N945WS
<b>Aircraft:</b>	Beech A100	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Landing gear collapse	<b>Injuries:</b>	4 None
<b>Flight Conducted Under:</b>	Part 91: General aviation		

## Analysis

According to the pilot, while lowering the landing gear handle in preparation for landing, he and the co-pilot heard a crunching noise. He noticed that the landing gear indicator lights did not turn green, and the crew was unable to extend the gear manually. The crew diverted to an airport with emergency equipment and a control tower. Following a fly-by, the tower controller reported that the landing gear appeared to be extended; however, during the landing roll, the left main landing gear collapsed, followed by the right main landing gear, resulting in substantial damage to the airplane. Examination of the airplane revealed that the main landing gear mechanical linkage was compromised, and the right main landing gear actuator shaft was broken. A mechanic examined the airplane and found that the actuator pinion bearing support had separated from the actuator for undetermined reasons, causing a side load to the actuator and initiating the fracture.

## Probable Cause and Findings

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

A landing gear collapse due to the separation of the actuator pinion bearing support from the actuator, which resulted in the failure of the actuator shaft.

## Findings

**Aircraft**

Landing gear actuator - Failure

# Factual Information

## History of Flight

Landing-landing roll	Landing gear collapse (Defining event)
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On March 12, 2019, about 1336 eastern daylight time, a Beech A100, N945WS, was substantially damaged after the main landing gear collapsed during landing at Arnold Palmer Regional Airport (LBE), Latrobe, Pennsylvania. The two airline transport pilots and two passengers were not injured. Visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed for the flight that originated from Capital City Airport (CXY), Harrisburg, Pennsylvania, and was destined for Rostraver Airport (FWQ), Monongahela, Pennsylvania. The business flight was conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91.

According to the pilot, the airplane was on approach to FWQ when he lowered the landing gear handle and heard a crunching noise. He noticed there were no green cockpit indicator lights to confirm that the landing gear was down and locked. The pilot then asked the co-pilot to circle the airport while he reviewed the emergency procedures for extending the landing gear in the airplane flight manual. He tried to extend the landing gear manually, but it appeared to be jammed. The pilot and co-pilot discussed the situation and decided to fly to LBE as that airport had a control tower and emergency equipment.

The pilot flew by the tower and asked if tower personnel could see the landing gear down. The tower controller told him that the landing gear appeared to be down. During the subsequent landing roll, the left main landing gear collapsed, followed shortly by the right main landing gear. The airplane then slid to a stop on the centerline of the runway and the flight crew and passengers egressed the airplane.

Examination of the airplane by a Federal Aviation Administration (FAA) inspector revealed that the main landing gear mechanical linkage was compromised, and the right main landing gear actuator shaft was broken. The actuator was retained for further examination.

The airplane was repaired at LBE with oversight from the FAA. During the repair, the right main landing gear actuator was observed to be fractured. Additionally, the actuator pinion bearing had separated from the actuator, which could cause a side load to the actuator and initiate the fracture.

## Pilot Information

<b>Certificate:</b>	Airline transport; Commercial; Flight instructor	<b>Age:</b>	79, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	Airplane; Helicopter	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	Airplane multi-engine; Airplane single-engine	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 With waivers/limitations	<b>Last FAA Medical Exam:</b>	December 3, 2018
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	August 1, 2018
<b>Flight Time:</b>	20611 hours (Total, all aircraft), 850.7 hours (Total, this make and model), 10.1 hours (Last 90 days, all aircraft)		

## Co-pilot Information

<b>Certificate:</b>	Airline transport; Commercial; Private	<b>Age:</b>	66, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	Glider	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	April 10, 2018
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	August 1, 2018
<b>Flight Time:</b>	9400 hours (Total, all aircraft), 50 hours (Total, this make and model)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Beech	<b>Registration:</b>	N945WS
<b>Model/Series:</b>	A100 UNDESIGNAT	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1972	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	B-94
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	9
<b>Date/Type of Last Inspection:</b>	March 1, 2019 AAIP	<b>Certified Max Gross Wt.:</b>	11500 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	2 Turbo prop
<b>Airframe Total Time:</b>	10984 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Honeywell
<b>ELT:</b>	C91A installed, not activated	<b>Engine Model/Series:</b>	TPE-331
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	715 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>	KLBE, 1199 ft msl	<b>Distance from Accident Site:</b>	1 Nautical Miles
<b>Observation Time:</b>	17:47 Local	<b>Direction from Accident Site:</b>	33°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	20 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	10 knots / None	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>	240°	<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>	30.34 inches Hg	<b>Temperature/Dew Point:</b>	4°C / -7°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Harrisburg, PA (CXY)	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	Monongahela, PA (FWQ)	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>	12:00 Local	<b>Type of Airspace:</b>	

## Airport Information

<b>Airport:</b>	Arnold Palmer Rgnl LBE	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	1198 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	24	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	8222 ft / 100 ft	<b>VFR Approach/Landing:</b>	Full stop;Precautionary landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	2 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	2 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	4 None	<b>Latitude, Longitude:</b>	40.273056,-79.408332(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Boggs, Daniel
<b>Additional Participating Persons:</b>	Dean Glasser; FAA; Allegheny, PA
<b>Original Publish Date:</b>	December 3, 2020
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 3</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=99100">https://data.nts.gov/Docket?ProjectID=99100</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](#).