



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	San Antonio, Texas	Accident Number:	CEN20LA175
Date & Time:	May 8, 2020, 20:50 Local	Registration:	N31704
Aircraft:	Beech 1900	Aircraft Damage:	Substantial
Defining Event:	Landing gear collapse	Injuries:	1 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

During the cargo flight's initial climb, the landing gear did not retract when the landing gear handle was raised. The pilot attempted to cycle the landing gear handle once more, which yielded the same result. Following the second unsuccessful gear retraction, the pilot elected to leave the landing gear handle in the DOWN position and continued to the destination.

Prior to landing the pilot completed the before landing checklist and noted three green lights and no red lights, which indicated the landing gear was down, locked, and safe for landing.

The airplane touched down on the runway and the left main landing gear collapsed, the red unsafe light in the landing gear handle illuminated and was followed by an aural horn indicating the landing gear was now unlocked and unsafe for landing. Simultaneously, the airplane began to dip toward the left, causing the left-wing tip to contact the runway. The airplane exited the runway, resulting in substantial damage to the left wing.

A postaccident examination revealed that the left main landing gear upper drag leg arm fractured in bending and twisting overload. There was no evidence of preexisting cracking or corrosion. The dimensions of the part were consistent with the drawing and the chemical composition and microstructure were consistent with 7075 aluminum alloy, as required. The mechanical properties were lower, and the electrical conductivity was higher than the requirements for 7075-T6 aluminum alloy. The measured mechanical properties and electrical conductivity did not conform to any standard temper for 7075 aluminum alloy.

A review of the operator's maintenance records revealed that several months prior to the accident, the left main landing gear drag brace assembly was replaced on the airplane because it was due for overhaul. The left main landing gear drag brace assembly installed was the unit removed after the accident. The drag brace assembly had been overhauled by the operator.

Based on the paperwork, the overhaul work performed did not interfere with the mechanical properties of the upper drag leg arm.

The failure of the left main landing gear upper drag leg arm during the touchdown resulted in a collapse of the gear and the left wing's subsequent contact with terrain. The failure of the upper drag arm was the result of substandard mechanical properties.

Probable Cause and Findings

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

The failure of the left main landing gear upper drag leg arm due to substandard mechanical properties, which resulted in a collapse of the landing gear upon landing.

Findings

Aircraft	Main landing gear - Failure
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Factual Information

History of Flight

Landing	Sys/Comp malf/fail (non-power)
Landing	Landing gear collapse (Defining event)
Landing	Collision during takeoff/land

On May 8, 2020, about 2050 central daylight time, a Beechcraft 1900C airplane, N31704, sustained substantial damage when it was involved in an accident near San Antonio, Texas. The pilot sustained no injury. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 135 cargo flight, as Ameriflight 1829.

The operator reported that the flight departed the Corpus Christi International Airport (CRP), Corpus Christi, Texas, at 2004, with 631 lbs of cargo, and a fuel load of 2,800 lbs. During the initial climb, the captain selected the landing gear handle to the UP position to retract the landing gear. The attempt was unsuccessful, and the captain attempted to cycle the landing gear handle once more, which yielded the same result. Following the second unsuccessful gear retraction, the captain elected to leave the landing gear handle in the DOWN position and continued to the San Antonio International Airport (SAT), San Antonio, Texas, where more services would be available if needed. At SAT, air traffic control cleared the airplane for the visual approach. The pilot entered a right base leg and completed the before landing checklist, noting three green lights and no red lights, which indicated the landing gear was down, locked, and safe for landing.

The airplane touched down, about 90 kts, around the aiming point marker on runway 4. As the main landing gear touched down on the dry concrete, the left main landing gear collapsed, the red unsafe light in the landing gear handle illuminated, and was followed by an aural horn, indicating the landing gear was now unlocked and unsafe for landing. Simultaneously, the airplane began to dip toward the left, causing the left-wing tip to contact the runway. The pilot reported there was no side loading during the touchdown. The airplane subsequently exited the runway and came to a stop. The left wing sustained substantial damage from the accident sequence.

The airplane was lifted after the accident to allow the left main landing gear to be manually extended and pinned in place. The upper drag leg arm was found fractured, and the actuator forward rod end was bent. The left main landing gear drag brace assembly (Beech part number 114-810023-1, serial number ARC31209-5) and the left main landing gear actuator (Beech part number 114-380041-21, APPH part number 40600-12, serial number 14) were retained for further examination.

A postaccident examination revealed that the upper drag leg arm fractured in bending and twisting overload. There was no evidence of pre-existing cracking or corrosion. The dimensions

of the part were consistent with the drawing and the chemical composition and microstructure were consistent with 7075 aluminum alloy as required. The mechanical properties were lower, and the electrical conductivity was higher than the requirements for 7075-T6 aluminum alloy. The measured mechanical properties and electrical conductivity did not conform to any standard temper for 7075 aluminum alloy.

A review of the operator's maintenance records revealed that on April 29, 2020, the left main landing gear and right main landing gear drag brace assemblies were replaced on the airplane because they were due for overhaul. The left main landing gear drag brace assembly installed was the unit removed after the accident (serial number ARC31209-5). The drag brace assembly had been overhauled by Ameriflight in February 2020. Based on the paperwork, the overhaul entailed disassembly, stripping of paint, inspection, repaint, and reassembly with new hardware.

A postaccident functional test of the left main landing gear actuator found no anomalies. A postaccident laboratory analysis of a sample of the airplane's hydraulic fluid found no anomalies.

A review of the operator's cargo load manifest showed that the airplane was within weight and balance limitations for the flight. The airplane was not equipped with a cockpit voice recorder or flight data recorder, nor was it required to be.

Pilot Information

Certificate:	Airline transport	Age:	68, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	4-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:	June 10, 2019
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	May 7, 2020
Flight Time:	25358 hours (Total, all aircraft), 944 hours (Total, this make and model), 26293 hours (Pilot In Command, all aircraft), 83 hours (Last 90 days, all aircraft), 29 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N31704
Model/Series:	1900 C	Aircraft Category:	Airplane
Year of Manufacture:	1984	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	UB-12
Landing Gear Type:	Retractable - Tricycle	Seats:	3
Date/Type of Last Inspection:	May 4, 2020 AAIP	Certified Max Gross Wt.:	17120 lbs
Time Since Last Inspection:		Engines:	2 Turbo prop
Airframe Total Time:	41114.2 Hrs at time of accident	Engine Manufacturer:	Pratt & Whitney Canada
ELT:	C126 installed, not activated	Engine Model/Series:	PT6A-65B
Registered Owner:	UAS Transervices, Inc.	Rated Power:	1173 Horsepower
Operator:	Ameriflight, LLC	Operating Certificate(s) Held:	On-demand air taxi (135)
Operator Does Business As:	Ameriflight	Operator Designator Code:	JIKA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night
Observation Facility, Elevation:	KSAT, 789 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	20:51 Local	Direction from Accident Site:	328°
Lowest Cloud Condition:	Few / 6000 ft AGL	Visibility	10 miles
Lowest Ceiling:	Broken / 25000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	13 knots / 20 knots	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	20°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.06 inches Hg	Temperature/Dew Point:	23°C / 10°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Corpus Christi, TX (CRP)	Type of Flight Plan Filed:	IFR
Destination:	San Antonio, TX (SAT)	Type of Clearance:	IFR
Departure Time:	20:04 Local	Type of Airspace:	Class C

Airport Information

Airport:	San Antonio Intl SAT	Runway Surface Type:	Concrete
Airport Elevation:	809 ft msl	Runway Surface Condition:	Dry;Rubber deposits
Runway Used:	04	IFR Approach:	None
Runway Length/Width:	8505 ft / 150 ft	VFR Approach/Landing:	Full stop;Straight-in

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	29.523611,-98.469444(est)

Administrative Information

Investigator In Charge (IIC):	Hodges, Michael
Additional Participating Persons:	Victor Lopez; FAA San Antonio FSDO; San Antonio, TX Matthew Payne; Ameriflight; DFW Airport, TX Daniel Henry; Ameriflight; DFW Airport, TX Casey Love; Textron Aviation; Wichita, KS
Original Publish Date:	March 30, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=101261

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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](#).