



National Transportation Safety Board Aviation Accident Final Report

Location:	Burlington, VT	Accident Number:	ERA13LA005
Date & Time:	10/02/2012, 0900 EDT	Registration:	N8025M
Aircraft:	CESSNA 310I	Aircraft Damage:	Substantial
Defining Event:	Landing gear collapse	Injuries:	2 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot reported that he landed the multiengine airplane without incident; however, while taxiing after landing, the left main landing gear collapsed, which resulted in substantial damage to the left wing and left horizontal stabilizer. Subsequent examination of the airplane revealed that the left main landing gear bellcrank pin had separated from its bushing. The pin was not located; however, metallurgical examination of the left main landing gear bellcrank and retraction link revealed significant deformation and fracturing of the bellcrank bushing, which was consistent with a very large force applied along the axis of the link. The deformations on the link suggested that the pin fractured inside the hole and exited the bore as two separate pieces. Although an overstress failure seems probable, other failure modes, such as a significant fatigue crack cannot be ruled out because the fractured pin fragments were not located. The airplane was manufactured about 38 years before the accident. It had been operated for about 3,675 total hours, about 25 hours of which occurred since its most recent annual inspection, which was performed about 2 months earlier.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The collapse of the left main landing gear due to a failure of the left main gear bellcrank pin for reasons that could not be determined because the pieces of the fractured bellcrank pin were not located.

Findings

Aircraft	Gear extension and retract sys - Failure (Cause)
Not determined	Not determined - Unknown/Not determined (Cause)

Factual Information

On October 2, 2012, about 0900 eastern daylight time, a Cessna 310I, N8025M, operated by a private individual, was substantially damaged while taxiing after landing at the Burlington International Airport (BTV), Burlington, Vermont. The private pilot and a passenger were not injured. Visual meteorological conditions prevailed and no flight plan had been filed for the local personal flight that was conducted under the provisions of 14 Code of Federal Regulations Part 91.

According to the pilot, the airplane landed on runway 15, an 8,320-foot-long, asphalt and concrete runway without incident. He taxied toward the end of the runway and was making a right turn onto taxiway "C" when the left landing gear began to collapse. The left side of the airplane struck the ground, which resulted in substantial damage to the left wing and left horizontal stabilizer.

Subsequent examination of the airplane by a Federal Aviation Administration (FAA) inspector revealed that the left main gear bellcrank pin separated from its bushing. The pin was not located; however, the left main gear bellcrank and retraction link were removed and forwarded to the NTSB Materials Laboratory, Washington, D.C., for examination.

The airplane was manufactured in 1964. According to an FAA inspector, at the time of the accident, the airplane had been operated for about 3,675 total hours and 25 hours since its most recent annual inspection, which was performed on August 8, 2012.

Metallurgical examination revealed that the bellcrank and retraction link were connected by a pin inserted through a clevis on the long arm of the bellcrank and a pivot hole on the retraction link. One of the clevis tangs was bent outward and contained a small crack. Both flange bushings were fractured in similar manners on the inside of the clevis and the liberated halves of the bushings displayed features consistent with overstress, with no evidence of progressive cracking. The edges of the inner bore of the pivot hole in the retraction link were locally deformed radially outward in one direction on each side of the link, consistent with pin contact. [Additional information can be found in the Materials Laboratory Factual Report located in the public docket.]

According to a representative from Cessna Aircraft Company, Cessna was not aware of any previous failures or separations involving only the main landing gear bellcrank pin on Cessna 310 series airplanes.

History of Flight

Taxi-from runway	Landing gear collapse (Defining event)
------------------	--

Pilot Information

Certificate:	Private	Age:	32
Airplane Rating(s):	Multi-engine Sea; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Without Waivers/Limitations	Last Medical Exam:	02/13/2008
Occupational Pilot:	No	Last Flight Review or Equivalent:	09/14/2012
Flight Time:	450 hours (Total, all aircraft), 160 hours (Total, this make and model), 420 hours (Pilot In Command, all aircraft), 100 hours (Last 90 days, all aircraft), 25 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	CESSNA	Registration:	N8025M
Model/Series:	310I	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	310I0025
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	08/08/2012, Annual	Certified Max Gross Wt.:	5100 lbs
Time Since Last Inspection:	25 Hours	Engines:	2 Reciprocating
Airframe Total Time:	3675 Hours	Engine Manufacturer:	Continental Motors Inc.
ELT:	Installed, not activated	Engine Model/Series:	IO-470U
Registered Owner:	On file	Rated Power:	265 hp
Operator:	On file	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	BTV, 335 ft msl	Observation Time:	0854 EDT
Distance from Accident Site:	0 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	0°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:		Temperature/Dew Point:	14° C / 11° C
Lowest Ceiling:	Broken / 8500 ft agl	Visibility	10 Miles
Wind Speed/Gusts, Direction:	6 knots, 180°	Visibility (RVR):	
Altimeter Setting:	30.01 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Burlington, VT (BTV)	Type of Flight Plan Filed:	None
Destination:	Burlington, VT (BTV)	Type of Clearance:	None
Departure Time:	EDT	Type of Airspace:	

Airport Information

Airport:	Burlington (BTV)	Runway Surface Type:	Asphalt
Airport Elevation:	335 ft	Runway Surface Condition:	Dry
Runway Used:	15	IFR Approach:	None
Runway Length/Width:	8320 ft / 150 ft	VFR Approach/Landing:	Full Stop; Traffic Pattern

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		

Administrative Information

Investigator In Charge (IIC):	Luke Schiada	Adopted Date:	01/13/2014
Additional Participating Persons:	John H Bell; FAA\FSDO; Portland, ME Steve Miller; Cessna Aircraft Company; Wichita, KS		
Publish Date:	01/13/2014		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=85239		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report.