Aviation Investigation Final Report

Location:	Mesa, Arizona	**Accident Number:**	WPR14LA368
Date & Time:	September 6, 2014, 12:26 Local	**Registration:**	N5966P
Aircraft:	Piper PA 24-250	**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, during the approach to land, the right main landing gear (MLG) would not extend and lock, and the locked gear-down position would not illuminate. The pilot attempted to manually extend the gear and get it to lock without success. The pilot then conducted a normal landing, and during the rollout, the right MLG collapsed.

Examination of the airplane revealed that the two landing gear cables were rigged slightly differently and that the right bracket that connected the landing gear transmission to the airframe was broken off. Examination of the break with a magnifying glass revealed that it likely had not occurred recently. With the airplane on jacks and the landing gear cables disconnected, the MLG successfully locked down, and the MLG could be manually returned to the "up" position with no restrictions.

The airplane experienced a gear-up landing 13 years before the accident, and it is likely that the differential rigging of the two gear cables had existed since that time and led to the MLG being just on the edge of locking. The broken bracket that connected the MLG transmission to the airframe likely fractured some time before the accident and eventually separated from the airframe. The separation of the right MLG transmission bracket coupled with the differential rigging of the two landing gear cables likely prevented the right MLG from moving over center to the "locked" position and resulted in the gear-up landing.

Probable Cause and Findings

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

The failure of the right main landing gear (MLG) transmission mounting bracket coupled with the differential rigging of the two landing gear cables, which prevented the right MLG from moving to the down-and-locked position before landing.

Findings

Aircraft	Main landing gear - Damaged/degraded
Aircraft	Main landing gear - Failure
Aircraft	Main landing gear - Not specified

Factual Information

History of Flight

Landing-landing roll	Landing gear collapse (Defining event)

On September 6, 2014, at 1226 mountain standard time, a Piper PA24-250, N5966P, had the right main landing gear collapse during the landing roll at Falcon Field Airport, Mesa, Arizona. The airline transport pilot and one passenger were uninjured; the airplane sustained substantial damage to the right wing. The owner/pilot was operating the airplane under the provisions of 14 Code of Federal Regulations (CFR) Part 91. The cross-country flight departed Nephi, Utah, about 0930 with a planned destination of Mesa. Visual meteorological conditions prevailed, and no flight plan had been filed.

The pilot reported that on approach to land the right main landing gear would not extend and indicate a locked gear down position. After a low fly by, the pilot attempted to manually extend the gear but was unable to get a safe gear indication.

The pilot made a normal landing and during the roll out the right main landing gear collapsed.

The pilot stated that the airplane and engine had no mechanical failures or malfunctions during the flight.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	**Age:**	83
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Glider	**Restraint Used:**	Lap only
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Glider; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	July 1, 2014
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 1, 2013
Flight Time:	13201 hours (Total, all aircraft), 1223 hours (Total, this make and model), 13071 hours (Pilot In Command, all aircraft), 15 hours (Last 90 days, all aircraft), 11 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N5966P
Model/Series:	PA 24-250	**Aircraft Category:**	Airplane
Year of Manufacture:	1959	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	24-1059
Landing Gear Type:	Retractable - Tricycle	**Seats:**	
Date/Type of Last Inspection:	December 1, 2013 Annual	**Certified Max Gross Wt.:**	2899 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	LYCOMING
ELT:	C91 installed, not activated	**Engine Model/Series:**	O-540 SERIES
Registered Owner:	On file	**Rated Power:**	250 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KFFZ,1394 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	19:59 Local	**Direction from Accident Site:**	329°
Lowest Cloud Condition:	Scattered / 15000 ft AGL	**Visibility**	40 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	210°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.88 inches Hg	**Temperature/Dew Point:**	37°C / 16°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	NEPHI, UT (U14)	**Type of Flight Plan Filed:**	None
Destination:	Mesa, AZ (FFZ)	**Type of Clearance:**	None
Departure Time:	09:30 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	FALCON FLD FFZ	**Runway Surface Type:**	Asphalt
Airport Elevation:	1394 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	22R	**IFR Approach:**	None
Runway Length/Width:	3799 ft / 75 ft	**VFR Approach/Landing:**	Full stop;Go around;Precautionary landing

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	**Latitude, Longitude:**	33.460834,-111.728614(est)

Tests and Research

A Federal Aviation Administration inspector examined the wreckage. He discovered that the rigging of the two landing gear cables was slightly off. The bracket that connected the landing gear transmission to the airframe was broken off; when examined with a magnifying glass, the break did not appear to have occurred recently. With the airplane on jacks and the landing gear cables disconnected, the gear successfully locked down, and the gear could be manually returned to the up position with no restrictions. He determined that the airplane had a gear up landing in 2001.

Administrative Information

Investigator In Charge (IIC):	Jones, Patrick
Additional Participating Persons:	Joesph Chaundy; Federal Aviation Administration; Scottsdale, AZ
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Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=90036