



Aviation Investigation Final Report

Location:	Phoenix, Arizona	Accident Number:	WPR11LA471
Date & Time:	September 4, 2011, 09:20 Local	Registration:	N316PA
Aircraft:	Piper PA-44-180	Aircraft Damage:	Substantial
Defining Event:	Hard landing	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The private pilot and certified flight instructor (CFI) were practicing a series of landings. The CFI said that the second and third landings were short field landings and were not excessively hard. During the landing roll on the third landing, the nose of the airplane lowered, and the CFI suspected a collapse of the oleo strut. The CFI took control of the airplane and taxied down the runway. The CFI stated that, during the taxi, he noted nothing irregular with the handling of the airplane and informed the tower air traffic controller that this was going to be a full stop landing. After contacting the ground controller, the CFI added power, and noticed that the steering had failed, so he attempted to use differential thrust to turn the airplane. He then heard the propellers contact the ground and immediately shut down both engines. After exiting the airplane, he noticed that the nose gear was extended forward and resting against the most forward fuselage rib in the wheel well. A postaccident examination revealed a fractured and separated drag link and hydraulic fluid leaking from the wheel well. Examination of the fractured surfaces revealed rough matte gray features consistent with an overstress fracture.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's improper flare and hard landing, which resulted in the failure of the nose landing gear drag link in overstress.

Findings

Aircraft	Nose/tail gear strut/axle - Capability exceeded
Aircraft	Landing flare - Incorrect use/operation
Aircraft	Nose/tail landing gear - Failure
Personnel issues	Incorrect action performance - Pilot

Factual Information

History of Flight

Landing-flare/touchdown	Hard landing (Defining event)
Landing	Landing gear collapse

On September 4, 2011, about 0920 mountain standard time, a Piper PA-44-180, N316PA, experienced a nose landing gear collapse after landing at Deer Valley Airport (DVT), Phoenix, Arizona. The certified flight instructor (CFI) and private pilot were not injured. The airplane sustained substantial damage to the forward portion of the fuselage. The airplane was registered to, and operated by, Bird Acquisition LLC under the provisions of 14 Code of Federal Regulations Part 91 as an instructional flight. Visual meteorological conditions prevailed, and no flight plan had been filed for the local flight.

The CFI reported that the private pilot was practicing landings in preparation for a check ride. The second and third landings were short field landings, which were not excessively hard. The CFI stated that during the landing roll on the third landing, the nose went low, and he suspected a collapse of the oleo strut. The CFI took control, and continued to taxi down the runway while making an effort to prevent the propellers from contacting the ground. At this point, the CFI did not see, hear, or feel any indication of a prop strike. He noted that the airplane was rolling smoothly and retained steering ability as he continued to let the airplane roll out without applying the brakes. He added that use of the pedals did not give any indication of a broken linkage or mechanical impediment of any kind.

As the airplane approached a taxiway, the CFI informed the air traffic control tower that the landing would be a full stop, and initiated a turn to exit the runway onto a taxiway. The turn off the runway did not reveal any problems with steering; however, the CFI had to use slight braking to stop clear of another taxiway.

After contacting ground control, the CFI added power, and noticed that the airplane was moving toward the dirt area between the taxiway and the ramp. He also noted that the steering had failed, so he attempted to use differential thrust to get the airplane pointed back toward the ramp. He then heard the propellers contact the ground; he immediately shut down both engines. After exiting the airplane, he noticed that the nose gear was extended forward and resting against the most forward fuselage rib in the wheel well; the rib sustained substantial damage. Upon inspection, he saw a fractured and separated drag link at the joint in addition to hydraulic fluid leaking from the wheel well.

A specialist from the National Transportation Safety Board's Materials Laboratory examined the fractured drag link. The specialist observed that the fracture features showed rough matte gray features consistent with overstress fracture. He observed no evidence of fatigue

cracking.

Flight instructor Information

Certificate:	Airline transport; Commercial; Flight instructor	Age:	43, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	Toxicology Performed:	No
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	January 17, 2011
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	March 14, 2011
Flight Time:	3911 hours (Total, all aircraft), 772 hours (Total, this make and model), 3853 hours (Pilot In Command, all aircraft), 180 hours (Last 90 days, all aircraft), 53 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	Private	Age:	22
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Without waivers/limitations	Last FAA Medical Exam:	October 13, 2010
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	200 hours (Total, all aircraft), 22 hours (Total, this make and model), 117 hours (Pilot In Command, all aircraft), 74 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N316PA
Model/Series:	PA-44-180	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	4496125
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	August 26, 2011 AAIP	Certified Max Gross Wt.:	3800 lbs
Time Since Last Inspection:	20 Hrs	Engines:	2 Reciprocating
Airframe Total Time:	4382 Hrs at time of accident	Engine Manufacturer:	LYCOMING
ELT:	Installed, not activated	Engine Model/Series:	O-360 SERIES
Registered Owner:	BIRD ACQUISITION LLC	Rated Power:	180 Horsepower
Operator:	BIRD ACQUISITION LLC	Operating Certificate(s) Held:	None
Operator Does Business As:	TRANSPAC AVIATION ACADEMY	Operator Designator Code:	FQAS

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	DVT,1478 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	09:53 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	9 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	130°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.82 inches Hg	Temperature/Dew Point:	36°C / 11°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Phoenix, AZ (DVT)	Type of Flight Plan Filed:	None
Destination:	Phoenix, AZ (DVT)	Type of Clearance:	VFR
Departure Time:	07:40 Local	Type of Airspace:	

Airport Information

Airport:	Phoenix Deer Valley Airport DVT	Runway Surface Type:	Asphalt
Airport Elevation:	1478 ft msl	Runway Surface Condition:	Dry
Runway Used:	07R	IFR Approach:	None
Runway Length/Width:	8197 ft / 100 ft	VFR Approach/Landing:	Full stop;Touch and go;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	33.685554,-112.086387(est)

Administrative Information

Investigator In Charge (IIC):	Plagens, Howard
Additional Participating Persons:	Ernest R Copeland; Federal Aviation Administration; Scottsdale, AZ
Original Publish Date:	March 28, 2012
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=81920

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