



Aviation Investigation Final Report

Location:	Culpeper, Virginia	Accident Number:	ERA12LA188
Date & Time:	February 6, 2012, 18:16 Local	Registration:	N1WE
Aircraft:	Piper PA-30	Aircraft Damage:	Substantial
Defining Event:	Landing gear collapse	Injuries:	3 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

While approaching the destination airport, the pilot did not observe the green landing gear down-and-locked light illuminate when she moved the landing gear handle to the "down" position. She manipulated the handle several times and still did not observe the green light. The pilot stated that after she tried to manually extend the landing gear, the nose landing gear appeared to be extended in the viewing mirror, and she heard a "whistling" sound consistent with gear extension; however, the green down-and-locked light in the cockpit was not illuminated. The pilot continued to the airport to land. She reported that she heard the gear warning horn during the landing flare, but that it was "too late" to abort the landing, and the landing gear collapsed upon touchdown.

After the accident, the landing gear was cycled and operated normally, although the gear down-and-locked light did not appear to be illuminated. However, the airplane's navigation lights were observed to be in the "on" position. By design, the gear down-and-locked light illuminated more dimly with the navigation lights on (nighttime use) than with the navigation lights off (daytime use). When the emergency landing gear extension procedure was performed after the airplane's navigation lights were turned off, the gear extended and locked down, and the corresponding gear down-and-locked light was visibly illuminated. The emergency checklist that the pilot used during the accident flight did not instruct the pilot to confirm the position of the navigation lights, and the pilot stated that she did not consult the pilot's operating handbook (POH) during the flight. If the pilot had reviewed the emergency gear extension checklist in the POH or if the checklist she used had included a check of the navigation lights, the pilot may have been better able to determine the position of the landing gear before touchdown.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to use the manufacturer's checklist to troubleshoot the perceived malfunction and thereby ensure the position of the landing gear before landing. The reason the landing gear were not down and locked could not be determined, as no mechanical failures or anomalies were reported before the accident or observed during postaccident testing.

Findings

Personnel issues	Use of checklist - Pilot
Aircraft	Configuration - Related operating info
Aircraft	Gear position and warning - Incorrect use/operation

Factual Information

History of Flight

Landing-flare/touchdown	Landing gear collapse (Defining event)
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On February 6, 2012, at 1816 eastern standard time, a Piper PA-30, N1WE, was substantially damaged when its landing gear collapsed during landing at Culpeper Regional Airport (CJR), Culpeper, Virginia. The certificated airline transport pilot and 2 passengers were not injured. Visual meteorological conditions prevailed, and no flight plan was filed for the personal flight, which departed Hagerstown Regional Airport (HGR) about 1740. The flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

The pilot stated that, while approaching CJR to land, she did not observe the green landing gear down-and-locked light illuminate when she moved the landing gear handle to the "down" position. She manipulated the handle "several" times and did not observe the green light. The pilot then initiated the manual gear extension checklist with the assistance of the front seat passenger.

Review of air traffic control audio recordings revealed that the pilot contacted her husband, a controller at the Potomac Terminal Radar Approach Control facility, via radio and stated, "I have no gear light." When asked if the airplane's instrument panel lights were on, the pilot replied that they were, that she did not observe the gear down-and-locked indicator light, and that the landing gear would not extend. The controller instructed the pilot to check the landing gear circuit breaker, and the passenger confirmed that the circuit breaker was in. The controller proceeded to guide the pilot through the manual gear extension procedure.

She stated that after completing the manual gear extension, the nose landing gear appeared to be extended in the viewing mirror, and that she heard a "whistling" sound consistent with gear extension, but the green down-and-locked light was not illuminated. The pilot elected to continue the landing, and upon hearing the propellers strike the runway just after touchdown, shut down both engines and exited the airplane on the runway. The pilot reported that she heard the gear warning horn during the landing flare, but that it was "too late" to abort the landing.

The pilot held an airline transport pilot certificate with a rating for airplane multiengine land, and a commercial pilot certificate with a rating for airplane single-engine land. She also held a flight instructor certificate with ratings for airplane single- and multiengine, and instrument airplane. Her most recent FAA first-class medical certificate was issued in October, 2011. The pilot reported 4,100 total hours of flight experience, of which 175 hours were in the accident airplane make and model.

The airplane was manufactured in 1966, and was equipped with two Lycoming IO-320, 160 horsepower reciprocating engines. The airplane had accumulated 4,128 total flight hours at the time of its most recent annual inspection, which was completed in accordance with the manufacturer's inspection checklist on July 22, 2011.

The 1815 automated weather observation at CJR recorded calm winds, 10 miles visibility, clear skies, temperature 5 degrees C, dew point 0 degrees C, and an altimeter setting of 30.10 inches of mercury.

Postaccident examination by an FAA inspector revealed substantial damage to the fuselage. The airplane was placed on jacks and visual inspection of the landing gear system revealed no anomalies. The gear motor assembly was reconnected, and the landing gear was cycled and operated normally, though the gear down-and-locked light was not illuminated. The inspector observed that the navigation lights were on, and only when turned off did the gear down-and-locked light illuminate. The gear was retracted, and the yellow gear up-and-locked light illuminated. The emergency gear extension procedure was then performed, and the gear extended and locked down, with the corresponding down-and-locked light illuminated. The inspector stated that initially, the gear light would not illuminate until the navigation light rheostat was in the off, or daytime use, position. However, after manipulating the rheostat several times during the test, the gear down-and-locked light illuminated with the navigation lights on (nighttime use position), though the light was illuminated more dimly than with the navigation lights off.

According to the manufacturer's checklist, the landing, navigation, cabin, and instrument lights were required to be inspected at 100, 500, and 1000-hour intervals.

In a postaccident interview with the FAA inspector, the pilot provided the emergency checklist she had used during the accident flight. The inspector observed that the checklist contained in the airplane's Pilot Operating Handbook (POH) contained the item, "If landing gear operates, but green (gear down – locked) lamp fails to illuminate: Navigation lights...check off." The checklist being utilized by the pilot at the time of the accident did not contain this item. The pilot further stated that she did not consult the POH during the flight.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	Age:	51,Female
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	Toxicology Performed:	No
Medical Certification:	Class 1 Unknown	Last FAA Medical Exam:	October 1, 2011
Occupational Pilot:	No	Last Flight Review or Equivalent:	September 21, 2011
Flight Time:	4100 hours (Total, all aircraft), 175 hours (Total, this make and model), 3900 hours (Pilot In Command, all aircraft), 85 hours (Last 90 days, all aircraft), 28 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N1WE
Model/Series:	PA-30	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	30-1193
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	July 22, 2011 Annual	Certified Max Gross Wt.:	3725 lbs
Time Since Last Inspection:		Engines:	2 Reciprocating
Airframe Total Time:	4128 Hrs as of last inspection	Engine Manufacturer:	LYCOMING
ELT:	Installed, not activated	Engine Model/Series:	IO-320 SERIES
Registered Owner:	RIDLEY LOUIS CHARLES JR	Rated Power:	150 Horsepower
Operator:	RIDLEY LOUIS CHARLES JR	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Dusk
Observation Facility, Elevation:	CJR,316 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	18:15 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.1 inches Hg	Temperature/Dew Point:	5°C / 0°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Hagerstown, MD (HGR)	Type of Flight Plan Filed:	None
Destination:	Culpeper, VA (CJR)	Type of Clearance:	Unknown
Departure Time:	17:10 Local	Type of Airspace:	

Airport Information

Airport:	Culpeper Regional CJR	Runway Surface Type:	Asphalt
Airport Elevation:		Runway Surface Condition:	Dry
Runway Used:	22	IFR Approach:	None
Runway Length/Width:	5000 ft / 100 ft	VFR Approach/Landing:	Full stop;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	2 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 None	Latitude, Longitude:	38.525554,-77.859725

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian
Additional Participating Persons:	Mark Fair; FAA/FSDO; Washington, DC
Original Publish Date:	January 22, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=82939

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