Aviation Investigation Final Report

Location:	Atlanta, Georgia	**Accident Number:**	ERA16LA042
Date & Time:	November 6, 2015, 17:10 Local	**Registration:**	N731LT
Aircraft:	Cessna P210	**Aircraft Damage:**	Substantial
Defining Event:	Landing gear collapse	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation		

Analysis

The private pilot reported that he was conducting an instrument flight rules cross-country flight and set up for an RNAV approach; however, he was subsequently cleared for an instrument landing system approach. He added that he continued to the airport, recalled lowering the landing gear, but because he was setting up for a different approach, he did not verify that the landing gear were down and locked. He added that the landing was normal but that, during the landing roll, he heard a "snap" and felt the airplane drop and veer left. The airplane departed the left side of the runway and came to rest with the nose landing gear (NLG) down and locked but with both main landing gear (MLG) collapsed.

Postaccident examination revealed no damage to either MLG downlock hook assembly. Testing of the landing gear system revealed that it functioned normally during multiple gear cycles, including an emergency extension. A check of the landing gear warning horn revealed that it was mis-set about 0.3 inch higher than specified, which reduced timely warning that the gear were not down and locked.

Given there was no damage to either MLG downlock hook assembly, it is likely that neither MLG were down and locked at touchdown because the pilot extended the landing gear late during the approach and did not verify that they were down and locked, which only allowed sufficient time for the NLG, which extends and locks first, to fully extend and lock before touchdown. If the landing gear warning horn had been properly set, it is likely the pilot would have been warned in time to either go around or to allow for complete gear extension before landing.

Probable Cause and Findings

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

The pilot's delayed extension of the landing gear and his failure to ensure that the main landing gear (MLG) were down and locked before touchdown, which resulted in the collapse of both MLG. Contributing to the landing gear collapse was the mis-set landing gear warning horn, which prevented timely notification that the landing gear were not down and locked.

Findings

Personnel issues	Delayed action - Pilot
Aircraft	Gear position and warning - Incorrect service/maintenance

Factual Information

History of Flight

Landing-landing roll	Landing gear collapse (Defining event)

On November 6, 2015, about 1710 eastern standard time, a Cessna P210N, N731LT, was substantially damaged while landing at DeKalb-Peachtree Airport (PDK), Atlanta, Georgia. The private pilot and one passenger were not injured. The airplane was registered to Horst Aviation, LLC, but operated by an individual under the provisions of 14 *Code of Federal Regulations* Part 91 as a business flight. Visual meteorological conditions prevailed at the time of the accident, and the flight was operating on an instrument flight rules flight plan. The flight originated from Smoketown Airport (S37), Smoketown, Pennsylvania, about 1330, and was destined for PDK.

The pilot stated that he expected and was set up for an RNAV approach, but was cleared for the ILS approach to runway 21L. He continued inbound to PDK and upon reaching the final approach fix, he recalled lowering the landing gear, but because of the approach distraction he did not verify that the landing gear was down and locked. He continued the approach, and reported breaking out of the clouds at 2,000 feet. When the airplane was at 200 feet above ground level, he reduced power and did not hear any warning horn. He indicated the landing was normal and very smooth, and after rolling about 400 feet, he heard a "snap" and felt the airplane drop and veer to the left. The airplane rolled off the runway onto grass and came to rest with the nose landing gear down and locked but both main landing gear collapsed. The airplane was raised, and both main landing gear were extended for towing to the ramp.

Following recovery of the airplane, examination of both main landing gear actuators revealed no evidence of leaks or hydraulic residue. A test gauge was plumbed into the aircraft's landing gear hydraulic system and held pressure (1,500+ psi) in the up and down position for more than 10 minutes. The airplane was placed on jacks and several fault-free gear cycles were performed including an emergency extension. The single landing gear down and locked light functioned normally, and left main landing gear down limit switch which felt, "a little sticky", was replaced. There was no report of any damage to either main landing gear downlock hook assembly. A check of the landing gear warning horn revealed it was set 0.3 inch above the flight idle gate, while it is specified to be set 0.6 inch above the flight idle gate. It was adjusted to the specified amount, and although a flight check of the landing gear warning system was not performed during a postaccident maintenance flight check, the repair facility reported it was performed by the owner on the first flight after completion of repairs and no discrepancy was reported.

The airplane's landing gear was hydraulically controlled, and by design the nose landing gear extended aft while the main landing gears extended forward. A representative of the airplane manufacturer reported that during landing gear extension, the nose landing gear locked into place followed by the main landing gear. This was because the nose landing gear extended aft and was assisted by airloads, while the main landing gear extend forward against airloads. During retraction of the main landing gear, the wheel assembly drops about 12 inches below the position when fully extended. Fully locking down

of the main landing gear actuator occurs with a downlock hook assembly installed on each main landing gear.

The airplane's last annual inspection was completed on February 26, 2015. There were no reported discrepancies during cycling of the gear that was performed during the inspection. The airplane had accrued about 66 hours since the inspection was performed.

Pilot Information

Certificate:	Private	**Age:**	66,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	July 1, 2015
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	January 29, 2015
Flight Time:	3461 hours (Total, all aircraft), 1206 hours (Total, this make and model), 3461 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N731LT
Model/Series:	P210 N	**Aircraft Category:**	Airplane
Year of Manufacture:	1979	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	P21000436
Landing Gear Type:	Retractable - Tricycle	**Seats:**	
Date/Type of Last Inspection:	January 26, 2015 Annual	**Certified Max Gross Wt.:**	4001 lbs
Time Since Last Inspection:	66 Hrs	**Engines:**	1 Turbo prop
Airframe Total Time:	4808.6 Hrs as of last inspection	**Engine Manufacturer:**	Allison
ELT:	Installed, not activated	**Engine Model/Series:**	250-B17F/2
Registered Owner:	On file	**Rated Power:**	475 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:	PDK,998 ft msl	**Distance from Accident Site:**	
Observation Time:	17:22 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 9000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	180°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	30.11 inches Hg	**Temperature/Dew Point:**	22°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Smoketown, PA (S37)	**Type of Flight Plan Filed:**	IFR
Destination:	Atlanta, GA (PDK)	**Type of Clearance:**	IFR
Departure Time:	13:30 Local	**Type of Airspace:**	

Airport Information

Airport:	DeKalb-Peachtree PDK	**Runway Surface Type:**	Concrete
Airport Elevation:	998 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	21L	**IFR Approach:**	ILS;Visual
Runway Length/Width:	6001 ft / 100 ft	**VFR Approach/Landing:**	None

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:**	33.879722,-84.298614(est)

Administrative Information

Investigator In Charge (IIC):	Monville, Timothy
Additional Participating Persons:	David M Persky; FAA/FSDO; Atlanta, GA
Original Publish Date:	October 17, 2017
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=92337