



# Aviation Investigation Final Report

<b>Location:</b>	Austin, Texas	<b>Incident Number:</b>	CEN131A563
<b>Date &amp; Time:</b>	September 12, 2013, 16:00 Local	<b>Registration:</b>	N617BG
<b>Aircraft:</b>	PILATUS AIRCRAFT LTD PC-12/47E	<b>Aircraft Damage:</b>	Minor
<b>Defining Event:</b>	Aircraft loading event	<b>Injuries:</b>	1 Minor, 9 None
<b>Flight Conducted Under:</b>	Part 135: Air taxi & commuter - Non-scheduled		

## Analysis

Immediately after the airplane lifted off the runway, the pilot lost pitch control, which resulted in a series of pitch oscillations and cockpit stall warnings. The pilot aborted the takeoff, and the airplane subsequently impacted the departure runway. The pilot subsequently stopped the airplane on the remaining runway.

The flight was being operated as a commercial on-demand passenger flight. According to the operator's operations specifications, actual passenger and carry-on baggage weights were required to be used to determine a flight's weight and balance; however, the trip schedule that the operator provided to the pilot before the flight did not include the actual passenger weights nor the carry-on baggage weights. A postincident review of weight and balance information revealed that the pilot failed to identify that the baggage weights were not included on the trip schedule and that he subsequently improperly calculated the airplane's weight and balance, which resulted in the exceedance of the aft center-of-gravity and weight limits for the flight. Further, the operator did not ensure that the airplane was loaded properly.

Examination of recorded flight data from the onboard lightweight data recorder (LDR) and postincident examination of the airplane revealed no anomalies that would have precluded normal operation. The LDR also recorded cockpit audio; however, download of the cockpit audio revealed that 2 hours of the recording, which included the incident flight, had been overwritten before the National Transportation Safety Board received the LDR.

## Probable Cause and Findings

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

The pilot's improper weight and balance calculations, which resulted in the airplane exceeding its weight and center-of-gravity limits and led to a loss of pitch control during takeoff, and the operator's failure to obtain required weight information and to ensure that the flight was properly loaded.

## Findings

<b>Aircraft</b>	CG/weight distribution - Capability exceeded
<b>Organizational issues</b>	Oversight of operation - Operator
<b>Personnel issues</b>	Weight/balance calculations - Pilot

## Factual Information

### History of Flight

<b>Prior to flight</b>	Aircraft loading event (Defining event)
<b>Takeoff</b>	Loss of control in flight
<b>Initial climb</b>	Stall warn/stick-shaker/pusher
<b>Uncontrolled descent</b>	Attempted remediation/recovery
<b>Uncontrolled descent</b>	Collision with terr/obj (non-CFIT)

On September 12, 2013, about 1600 central daylight time, a Pilatus Aircraft Ltd PC-12/47E, N617BG, experienced an aborted takeoff at Austin-Bergstrom International Airport (AUS) Austin, Texas, when the airplane began to settle onto the runway after lift-off. The airplane stopped on the remaining runway and sustained minor damage due to thermal damage of the right main landing gear wheel. The airline transport pilot was uninjured, eight passengers were uninjured, and one passenger sustained minor injuries. The airplane was registered to PB One Aviation LLC and was operated by FlighTime Business Jets, LLC under 14 Code of Federal Regulations Part 135 as an on-demand passenger flight that was operating on an instrument flight rules flight plan. Visual meteorological conditions prevailed for the flight that was originating at the time of the incident and was destined to Lubbock Preston Smith International Airport (LBB) Lubbock, Texas.

The Flighttime Business Jets, LLC Trip Schedule for the incident flight had a planned departure time from Austin-Bergstrom International Airport (AUS), Austin, Texas at 1515 that was to arrive at LBB at 1651. The Trip Schedule listed nine passengers with their respective weights. Cargo/carry-on baggage was not listed on the Trip Schedule. The flight was planned to depart from LBB at 2145 and return to AUS at 2315 with the same passengers listed. Three of the listed passengers were replaced and the Trip Sheet was not updated to reflect the replacement.

The pilot stated in a written statement:

"Taxi for takeoff to Runway 17L was normal and unencumbered. Checklists were complete to LINE UP CHECK. After I was cleared for takeoff power application, instrument check, and acceleration appeared to be normal. At rotation speed I smoothly and steadily rotated to establish a positive rate of climb to V<sub>x</sub> (120 knots). As the aircraft accelerated to 95 knots the airspeed stagnated and a positive rate of climb was not possible. Simultaneously, at 95 knots, the aural STALL WARNING activated accompanied by the STICK SHAKER. This was immediately followed by the STICK PUSHER violently pitching the nose down at the runway. I was able to override the STICK PUSHER to avoid a nose wheel impact on the runway. When I leveled the aircraft at about 20-30 feet AGL, the unaccelerated airspeed was still in the 95 knot range and again the aural STALL WARNING and STICK SHAKER activated. This again was followed by an immediate and violent nose pitch down caused by the STICK PUSHER. I repeated a recovery to level flight and avoided runway contact. The scenario repeated itself once again and the airspeed continued to appear to be stagnant. Again at about 95 knots the aural STALL WARNING and STICK SHAKER activated which was immediately followed by a STICK PUSHER violent downward

pitch. Again I recovered from the unusual attitude and avoided runway contact. After this recovery I was able to establish wings level and aborted the takeoff. I was able to settle the aircraft on the mains in a normal landing attitude. I did not perceive a hard landing. Because I had flown over a considerable amount of runway distance, after safely touching down, I applied what I believe was normal to moderate braking. I would not classify the braking as heavy in nature. I estimate the entire flying portion of the incident, from initial rotation to touchdown, took place in about 20 seconds."

Passengers stated that their weights were not verified before the flight and there were several coolers aboard that they had to climb over to get to their seats. They were not asked by the pilot or operator the weight of cargo/carry-on items, which included coolers they had brought for the flight. The coolers were not tied down for the flight. Passengers stated that they did not receive a passenger briefing for the flight.

### Pilot Information

<b>Certificate:</b>	Airline transport; Commercial	<b>Age:</b>	65
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Unknown
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Instrument airplane	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 With waivers/limitations	<b>Last FAA Medical Exam:</b>	September 4, 2013
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	August 16, 2013
<b>Flight Time:</b>			

The pilot held an airline transport pilot certificate with the following ratings: Airplane multiengine land, A-310, AVR-146, B-737, B-757, B-767, B-777, BAE-146, DC-9, LR-JET. The pilot held commercial privileges with an airplane single-engine land rating. The pilot held a flight instructor certificate with an instrument airplane rating with the following limitations: "may not serve as a flight instructor in flight valid only when accompanied by [airline transport pilot] certificate."

On July 19, 2013, the pilot was hired by FlighTime Business Jets, LLC as a pilot.

From July 29 to August 1, 2013, the pilot received Pilatus PC-12 initial pilot training using a level D simulator at FlightSafety International in preparation for a Part 135 checkride. Ten hours of simulator time was used as part of the training.

On August 9, 2013, the pilot received and passed an oral examination for preflight of equipment under Part 135.

On August 16, 2013, the pilot received an airman competency/proficiency check under Part 135.299 Pilot in command: Line checks: Routes and Airports, which was administered by FAA inspectors from the San Antonio FSDO. The incident airplane was used for the check and the flight duration of the check

was 1.3 hours.

The FlighTime Business Jets Daily Flight and Duty Log for September 2013, showed that the pilot accumulated 24.7 hours in PC12 airplanes.

The pilot had no previous FAA record of incidents, accidents, or enforcement actions.

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	PILATUS AIRCRAFT LTD	<b>Registration:</b>	N617BG
<b>Model/Series:</b>	PC-12/47E	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	2010	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	1253
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	
<b>Date/Type of Last Inspection:</b>	Continuous airworthiness	<b>Certified Max Gross Wt.:</b>	
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Turbo prop
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	Pratt & Whitney
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	PT6A-67P
<b>Registered Owner:</b>	PB One Aviation LLC	<b>Rated Power:</b>	1000 Horsepower
<b>Operator:</b>	FlighTime Business Jets, LLC	<b>Operating Certificate(s) Held:</b>	Commuter air carrier (135)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	QF7A

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	AUS,542 ft msl	<b>Distance from Accident Site:</b>	0 Nautical Miles
<b>Observation Time:</b>	15:53 Local	<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Scattered / 6500 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	5 knots /	<b>Turbulence Type Forecast/Actual:</b>	/ None
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	/ N/A
<b>Altimeter Setting:</b>	29.95 inches Hg	<b>Temperature/Dew Point:</b>	34°C / 18°C
<b>Precipitation and Obscuration:</b>			
<b>Departure Point:</b>	Austin, TX (AUS )	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	Lubbock, TX (LBB )	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>	16:00 Local	<b>Type of Airspace:</b>	

## Airport Information

<b>Airport:</b>	Austin-Bergstrom International AUS	<b>Runway Surface Type:</b>	Concrete
<b>Airport Elevation:</b>	542 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	17L	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	9000 ft / 150 ft	<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Minor
<b>Passenger Injuries:</b>	1 Minor, 8 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Minor, 9 None	<b>Latitude, Longitude:</b>	30.180362,-97.679672(est)

On September 13, 2014, the former FlighTime Business Jets, LLC Director of Operations reported to their Federal Aviation Administration (FAA) Principal Operations Inspector that the incident airplane had only experienced a flat tire during a rejected takeoff. The incident was not reported to the FAA or National Transportation Safety Board (NTSB) until September 16, 2013.

On September 17, 2014, FAA inspectors arrived at AUS to examine the airplane and airplane

maintenance records and upon their arrival a mechanic had been removing the right main tire, wheel, and brake assembly. The right wheel fuse plugs were melted and there were cracks and melted metal in the right tire sidewall. There was no damage to the airplane. The fuel onboard the airplane was 1,485 lbs. The cockpit pitch trim indicator was at the "green diamond." The aircraft weight and balance, as required by FAA regulations, was not in the airplane flight manual nor was it on board the airplane.

On September 26, 2013, the (Lightweight Data Recorder) LDR was removed under the supervision of a FAA inspector and shipped to the National Transportation Safety Board Vehicle Recorders Laboratory. The LDR had been downloaded by the operator prior to the LDR's removal without the knowledge of the NTSB Investigator-In-Charge or the FAA.

## Tests and Research

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### Aircraft Weight and Balance

FlightTime Business Jets, LLC Operations Specifications, A096 – Actual Weight Program for All Aircraft, specifies the loading schedule for the PC-12-47E, CE-510-510, CE-550-550, CE-560-560XLS, CE-650-650, is based upon actual weights. Section A096 stated that the certificate holder is authorized to use "only actual weights" when determining the aircraft weight and balance and states:

- (1) This includes passenger weights, carry-on bag weights, checked bag weights, plane-side loaded bag weights, and heavy bag weights, and/or
- (2) Actual weights of all passengers and bags or solicited ("asked") passenger weight plus 10 pounds and actual weights of bags.

Pilatus Aircraft Ltd PC-12/47E maximum weights are:

Ramp weight – 10,495 lbs

Take-off weight – 10,450 lbs

Landing weight – 9,921 lbs

Maximum zero fuel weight – 9,039 lbs

The aft center-of-gravity limits (CG) at the following weights, with a straight line variation between points, are:

10,450 lbs - 240.43 inches

9,921 lbs – 240.94 inches

According to the Flighttime Business Jets, LLC Trip Schedule, the total weight of passengers for the incident flight, which did not have the updated weights to reflect the change in three passengers, was 1,750 lbs. The pilot's weight and center of gravity graphical plot for the incident flight did not take into account carry-on items/baggage showed a CG of about 239 inches and a weight of 10,369 lbs.

The FAA inspector stated that about 490 lbs of carry-on items were not included in the weight and balance for the incident flight. The items consisted of a small ice chest and food that weighed about 60 lbs and four ice chests and boxes of food that weighed about 430 lbs. The actual passenger weights obtained for the flight was 2,031 lbs, which was obtained from passenger interviews. A weight and center of gravity plot showed that the incident flight was about 4 inches aft of the aft center gravity limit and about 100 lbs above the maximum ramp weight of the airplane.

A plot of the incident flight showed a series of seven peaks in pitch at a radio altitude of less than 20 feet. The last five of the seven peaks in pitch had corresponding stick shaker activations. There was no activation of the stick pusher.

## **Additional Information**

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The airplane's LDR was downloaded by the National Transportation Safety Board (NTSB) Vehicle Recorder Division. The recording indicated that it contained approximately 25 hours and 35 minutes of flight data. A new file was generated for each power cycle. The LDR also contained 2 hours of cockpit audio; however, the incident flight was overwritten and not available for evaluation.

A NTSB Pilot/Operator Accident/Incident Report was not received from the pilot.



## Administrative Information

**Investigator In Charge (IIC):** Gallo, Mitchell

**Additional Participating Persons:** Frank Fortman; Federal Aviation Administration; SAN FSDO; San Antonio, TX  
Bob Renshaw; Pilatus Business Aircraft Ltd; Broomfield, CO  
Marc Gratton; Pratt & Whitney Canada Corp; Longueuil, Quebec

**Original Publish Date:** February 4, 2015

**Last Revision Date:**

**Investigation Class:** [Class](#)

**Note:**

**Investigation Docket:** <https://data.nts.gov/Docket?ProjectID=88141>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).