



Aviation Investigation Final Report

Location:	Austin, Texas	Incident Number:	CEN131A563
Date & Time:	September 12, 2013, 16:00 Local	Registration:	N617BG
Aircraft:	PILATUS AIRCRAFT LTD PC-12/47E	Aircraft Damage:	Minor
Defining Event:	Aircraft loading event	Injuries:	1 Minor, 9 None
Flight Conducted Under:	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

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

Factual Information

History of Flight

Prior to flight	Aircraft loading event (Defining event)
Takeoff	Loss of control in flight
Initial climb	Stall warn/stick-shaker/pusher
Uncontrolled descent	Attempted remediation/recovery
Uncontrolled descent	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_x (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

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

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

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

Meteorological Information and Flight Plan

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

Airport Information

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

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Minor
Passenger Injuries:	1 Minor, 8 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor, 9 None	Latitude, Longitude:	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

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

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](#).