



Aviation Investigation Final Report

Location:	Columbia, South Carolina	Accident Number:	ATL06LA021
Date & Time:	December 8, 2005, 00:44 Local	Registration:	N997BW
Aircraft:	Piper PA-34-200	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

During takeoff the pilot rotated the airplane, and the airplane pitched up violently. The pilot lost control and the airplane climbed to approximately 200 feet. The pilot regained control of the airplane and conducted an emergency landing. The airplane collided with the runway, and veered off the right side of the departure end of runway. Examination of the airplane by an FAA inspector revealed that the nose gear strut punctured through the forward bulkhead, and cockpit instrument panel. Examination of the stabilator trim revealed one of the two bolts required on the stabilator trim arm was missing. Review of aircraft logbooks revealed the last inspection conducted on the airplane was a 100-hour completed on November 29, 2005. In addition to the 100-hour inspection, a repair was performed on the stabilator. Review of maintenance records showed that the airplane had flown 13 flight hours since the stabilator repair and prior to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Maintenance personnel's improper installation of the stabilator trim arm which resulted in separation of a bolt, loss of control during takeoff, and a subsequent hard landing.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: TAKEOFF

Findings

1. FLT CONTROL SYST,STABILATOR TRIM - LOOSE PART/BOLT/NUT/CLAMP/ETC
2. (C) MAINTENANCE,INSTALLATION - IMPROPER - COMPANY MAINTENANCE PERSONNEL
3. AIRCRAFT CONTROL - NOT POSSIBLE - PILOT IN COMMAND

Occurrence #2: FORCED LANDING

Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Occurrence #3: HARD LANDING

Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Factual Information

HISTORY OF FLIGHT

On December 8, 2005, at 0044 eastern standard time, a Piper PA-34-200, N997BW, registered to Bellefonte Incorporated, operated by Package Express, as a 14 CFR Part 135 flight, had a loss of stabilator trim control during take-off, and collided with the runway and ground at Columbia Metropolitan Airport, Columbia, South Carolina. Visual meteorological conditions prevailed and an instrument flight plan was filed. The airplane received substantial damage. The commercial pilot reported no injuries. The flight was originating from Columbia, South Carolina, on December 8, 2005, at 0044.

According to the pilot, a preflight inspection of the airplane was completed, and no anomalies were noted. The pilot departed from runway 29, and during rotation the airplane pitched up violently and climbed to 200 feet. The pilot regained partial control of the airplane and made an emergency landing. The airplane touched down on the runway and veered off the right side of the runway.

PERSONNEL INFORMATION

Review of information on file with the FAA Airman's Certification Division, Oklahoma City, Oklahoma, revealed that the pilot was issued a commercial pilot certificate on July 8, 2003, with ratings for airplane single engine and multiengine land, and instrument airplane. In addition, the pilot was issued a flight instructor certificate on October 31, 2005, with ratings for airplane single engine land and instrument airplane. The pilot's last biennial flight review was conducted on July 12, 2005. The pilot held a first class medical certificate issued on April 29, 2005, with no restrictions. The pilot was hired by Package Express on May 2, 2005, and qualified as a line pilot on May 3, 2005. The pilot completed his 6-month IFR check on November 5, 2005, and the pilot had accumulated 2,010 total flight hours with 475 hours in the Piper PA-34.

A review of information on file with the FAA Airman's Certification Division, Oklahoma City, Oklahoma, revealed that the A&P mechanic who performed the repairs on the accident airplane's stabilator was issued an airframe and power plant certificate on August 28, 1999. Package Express hired the mechanic on October 17, 2003. The mechanic was issued an inspection authorization certificate on July 26, 2005.

AIRCRAFT INFORMATION

Review of aircraft logbooks revealed the last inspection conducted on the airplane was a 100-hour inspection, completed on November 29, 2005. In addition to the 100-hour inspection a

repair was performed on the stabilator. Review of records showed the removal and replacement of the top left aft stabilator skin. The removal and replacement of the bottom right stabilator skin, and the checking of the stabilator balance in accordance with the Piper PA-34-200 service manual. At the time of the accident the airplane had flown 13 flight hours since the stabilator repair.

METEOROLOGICAL INFORMATION

The 2356 surface weather observation at Columbia Metropolitan Airport, Columbia, South Carolina was: wind 060 degrees at 9 knots, visibility 10 miles, 6,000 overcast, temperature 43 degrees Fahrenheit, dew point temperature 41 degrees Fahrenheit, and altimeter 30.57.

WRECKAGE AND IMPACT INFORMATION

The airplane came to rest 1,000 feet from the departure end of runway 29 at Columbia Metropolitan Airport, Columbia, South Carolina. The airplane was recovered by Package Express and transported to their maintenance facility for further examination. Examination of the airplane by the FAA and Package Express maintenance personnel revealed the nose gear strut had punctured through the forward bulkhead, and cockpit instrument panel. Examination of the stabilator trim revealed one of the two required bolts on the stabilator trim tab arm was missing.

MEDICAL AND PATHOLOGICAL INFORMATION

Toxicology testing of specimens taken from the pilot after the accident was forwarded to Quest Diagnostics Incorporated, San Diego, California for analysis on December 8, 2005. The results were negative for: Amphetamines, Cannabinoids, Cocaine, Opiates, and Phencyclidine in urine.

TEST AND RESEARCH

The Piper PA-34-200 inspection manual instructs the mechanics at the 100-hour inspection to inspect: aileron, rudder, rudder trim, stabilator, and stabilator trim cables, turnbuckles, fittings, guides and pulleys for safety, damage and operation." It also advises mechanics to inspect the "stabilator trim mechanism." The mechanic who performed the stabilator repair on the airplane stated "he visually checked the stabilator trim before signing off the logbook entry on November 29, 2005".

Review of the FAA Program Tracking Recording System revealed an Office Special Inspection was conducted on July 28, 2005, and an Operations Main Base Inspection was conducted on April 18, 2005. No en route inspections had been conducted by the District Office, Principal Operations Inspector, or Principal Maintenance Inspector one year before the accident.

Pilot Information

Certificate:	Commercial	Age:	30, Male
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 single-engine; Instrument airplane	Toxicology Performed:	No
Medical Certification:	Class 1 Without waivers/limitations	Last FAA Medical Exam:	November 1, 2005
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	July 1, 2005
Flight Time:	2010 hours (Total, all aircraft), 475 hours (Total, this make and model), 1710 hours (Pilot In Command, all aircraft), 361 hours (Last 90 days, all aircraft), 185 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N997BW
Model/Series:	PA-34-200	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	34-7450064
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	November 1, 2005 100 hour	Certified Max Gross Wt.:	4200 lbs
Time Since Last Inspection:	13.55 Hrs	Engines:	2 Reciprocating
Airframe Total Time:	7349.2 Hrs as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	IO-360-C1E6
Registered Owner:	Bellefonte Inc.	Rated Power:	200 Horsepower
Operator:	Package Express	Operating Certificate(s) Held:	On-demand air taxi (135)
Operator Does Business As:	Bellefonte Incorporated	Operator Designator Code:	XGPA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night/dark
Observation Facility, Elevation:	CAE,236 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	11:56 Local	Direction from Accident Site:	0°
Lowest Cloud Condition:	Unknown	Visibility	10 miles
Lowest Ceiling:	Overcast / 6000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	9 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	60°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.56 inches Hg	Temperature/Dew Point:	6°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Columbia, SC (CAE)	Type of Flight Plan Filed:	IFR
Destination:	Charleston, SC (CHS)	Type of Clearance:	IFR
Departure Time:	00:44 Local	Type of Airspace:	

Airport Information

Airport:	Columbia Metropolitan CAE	Runway Surface Type:	Asphalt
Airport Elevation:	236 ft msl	Runway Surface Condition:	Dry
Runway Used:	29	IFR Approach:	None
Runway Length/Width:	8601 ft / 150 ft	VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	33.93861,-81.119445

Administrative Information

Investigator In Charge (IIC):	Alleyne, Eric
Additional Participating Persons:	Scott Camp; Columbia FSDO-13; Columbia, SC
Original Publish Date:	April 25, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=62933

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](#).