Aviation Investigation Final Report

Location:	Concord, North Carolina	**Accident Number:**	ERA10LA108
Date & Time:	December 31, 2009, 20:45 Local	**Registration:**	N8985C
Aircraft:	Piper PA-32R-300	**Aircraft Damage:**	Substantial
Defining Event:	Landing gear collapse	**Injuries:**	1 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

While landing following an uneventful flight, the right main landing gear collapsed. An inspector from the Federal Aviation Administration found that an attachment bolt and retainer assembly had backed out of the aft landing gear trunnion assembly. The landing gear then separated at the aft trunnion. The barrel nut that held the attachment bolt was missing, and was not subsequently located. The inspector also noted no evidence of any pertinent maintenance performed within the previous year. Following the accident, the operator inspected all 30 fleet airplanes with no similar anomalies noted. In addition, all aircraft maintenance technicians were briefed on the accident and alerted to the area where the gear attachment hardware separated.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A missing right main landing gear aft trunnion mount attachment nut.

Findings

Aircraft	Main landing gear attach sec - Malfunction

Factual Information

History of Flight

Landing-flare/touchdown	Landing gear collapse (Defining event)

On December 31, 2009, about 2045 eastern standard time, a Piper PA-32R-300, N8985C, was substantially damaged while landing at Concord Regional Airport (JQF), Concord, North Carolina. The airplane was registered to Bellefonte, Inc. and operated by Ram Air Freight. The certificated commercial pilot was not injured. Night instrument meteorological conditions prevailed at the time, and an instrument flight rules flight plan was filed for the on-demand cargo flight conducted in accordance with 14 Code of Federal Regulations Part 135. The flight originated at Raleigh-Durham International Airport (RDU), Raleigh, North Carolina, at 1945.

The pilot reported that he performed an instrument landing system (ILS) approach to runway 20. As the airplane touched down, it “jolted” to the left. As the airplane was heading toward the runway edge, the pilot added power, rotated, and flew back to the runway centerline. With sufficient runway remaining, he closed the throttle, flared, and felt the left main and nose wheels contact the runway, but not the right main. The right wing tip contacted the runway and the pilot used full rudder to maintain directional control. The airplane came to a stop and the pilot exited the cockpit and was assisted by airport personnel.

The 2055 weather observation for JQF included the following: 100 feet overcast, surface winds calm, 1/4 statute miles visibility with fog and mist, temperature 8 degrees Celsius, dew point 6 degrees Celsius, and an altimeter setting of 30.03 inches of mercury.

An inspector with the Federal Aviation Administration responded to the accident site and inspected the airplane with the assistance of an aircraft maintenance technician provided by the operator. Their inspection revealed that the right main landing gear was collapsed. In addition, an AN4-40A attachment bolt, Piper part number 401-335, and retainer assembly, part number 67502-00, had backed out of the aft landing gear trunnion assembly. The landing gear then separated at the aft trunnion. The barrel nut that held the AN4-40A bolt was missing. The missing barrel nut was not located.

The inspector also reported that he inspected the maintenance records and found no evidence of recent maintenance to the landing gear that would be associated with the aft trunnion attachment hardware. There were no gear swings or any other recent landing gear maintenance for well over 1 year prior to the accident. All required inspections were complied with, and no anomalies were found in the airplane inspection program.

Following the accident, the operator inspected all 30 fleet airplanes with no similar anomalies noted. In addition, all aircraft maintenance technicians were briefed on the accident and

alerted to the area where the gear attachment hardware separated.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	31,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	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	October 22, 2009
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	October 20, 2009
Flight Time:	2430 hours (Total, all aircraft), 708 hours (Total, this make and model), 2295 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N8985C
Model/Series:	PA-32R-300	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	32R-7680147
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	November 5, 2009 AAIP	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	98 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	12664 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	C91 installed, not activated	**Engine Model/Series:**	IO-540-K1G5D
Registered Owner:	BELLEFONTE INC	**Rated Power:**	300 Horsepower
Operator:	Ram Air Freight Inc.	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	FFKA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	JQF,705 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	20:55 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	0 miles
Lowest Ceiling:	Overcast / 100 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.03 inches Hg	**Temperature/Dew Point:**	8°C / 6°C
Precipitation and Obscuration:	N/A - None - Fog		
Departure Point:	Raleigh, NC (RDU)	**Type of Flight Plan Filed:**	IFR
Destination:	Concord, NC (JQF)	**Type of Clearance:**	IFR
Departure Time:	19:45 Local	**Type of Airspace:**	

Airport Information

Airport:	Concord Regional JQF	**Runway Surface Type:**	Asphalt
Airport Elevation:	705 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	20	**IFR Approach:**	ILS
Runway Length/Width:	7400 ft / 100 ft	**VFR Approach/Landing:**	None

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:**	35.391666,-80.708335(est)

Administrative Information

Investigator In Charge (IIC):	Hicks, Ralph
Additional Participating Persons:	Duane Wood; FAA/FSDO; Charlotte, NC
Original Publish Date:	September 27, 2010
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=75230