Aviation Investigation Final Report

Location:	Hammonton, New Jersey	**Accident Number:**	ERA13LA191
Date & Time:	April 5, 2013, 11:50 Local	**Registration:**	N37480
Aircraft:	Cessna 414	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control on ground	**Injuries:**	1 Minor, 1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that, during a repositioning flight, he lowered the landing gear during the approach and confirmed that it was extended by observing the landing gear position indicator lights. Immediately after touchdown, the airplane veered left. The pilot applied full right rudder, but the airplane continued veering left and departed the left side of the runway. The airplane struck several trees and was subsequently engulfed in a postcrash fire. A postaccident examination revealed that the nose landing gear had separated from its mount at the left trunnion. Fractographic examination revealed a pre-existing crack at the surface of the left trunnion lug. Subsequent investigation revealed that the fractured part was a used part recently taken from another airplane that had over 20,000 service hours. The crack at the surface of the trunnion lug could not have been seen during a visual inspection of the trunnion assembly before its installation because such cracks can only be identified by eddy current inspections. Multiengine Service Bulletin MEB88-5 requires the trunnion assembly to be subjected to eddy current inspection and, if cracks are identified during this inspection, the trunnion assembly must be replaced; however, the inspection requirements are not applicable to Part 91 operators.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of control during landing due to the failure of the nose landing gear's left trunnion lug.

Findings

Aircraft	Nose/tail gear attach section - Failure

Factual Information

History of Flight

Landing-landing roll	Loss of control on ground (Defining event)
Landing-landing roll	Collision with terr/obj (non-CFIT)

On April 5, 2013, about 1150 eastern daylight time, a Cessna 414, N37480, registered to and operated by a private individual, was substantially damaged when it veered off the runway while landing at Hammonton Municipal Airport (N81), Hammonton, New Jersey. The private pilot was not injured and the commercial pilot-rated passenger received minor injuries. Visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed for the flight. The flight originated from Montgomery County Airpark (GAI), Gaithersburg, Maryland about 1105 and was destined for N81. The personal flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

The airplane was being repositioned to N81 in order for the owner's insurance adjuster and a local mechanic to physically inspect previous claim work for damage done during ground handling following Hurricane Sandy.

The pilot reported lowering the landing gear during the approach to runway 03, and confirmed that they were extended by observing the landing gear position indicator lights. Immediately after touchdown, the airplane veered to the left. The pilot applied full right rudder, but the airplane continued to veer to the left. After departing the left side of the runway, the airplane struck several trees and was subsequently engulfed in a post-crash fire.

According to FAA records, the pilot held a private certificate, with ratings for airplane single- and multiengine land. His most recent FAA third class medical certificate was issued on January 2, 2013. As of April 5, 2013, the pilot reported a total of 587 total hours of flight experience, of which 120 hours were in the same make and model as the accident airplane.

The seven-seat, twin-engine, low-wing, retractable tricycle-gear airplane was manufactured in 1977 and was equipped with two Continental Motors TSIO-520, 520-hp engines. Review of the airplane's maintenance logbooks revealed that its most recent annual inspection was completed on October 26, 2012. At the time of inspection, the airplane had accumulated 9,335 total hours in service. The number one and two engines accumulated approximately 735 and 157 total hours of operation since overhaul, respectively. The airplane had flown about three hours since the most recent annual inspection.

The 1154 recorded weather observation at Atlantic City International Airport (ACY), Atlantic City, New Jersey, located about 15 miles southeast of the accident site, included wind from 330 degrees at 13 knots, 10 miles visibility, few clouds at 1,600 feet, temperature 11 degrees C, dew point 4 degrees C, and a barometric altimeter setting of 29.83 inches of mercury.

N81 was a non-tower-controlled airport equipped with one asphalt runway, oriented in a 03/21 configuration. The runway was 3,601 feet in length and 75 feet wide. The field elevation for the airport was 65 feet mean sea level.

Examination of the accident site and surrounding area by a Federal Aviation Administration (FAA) inspector revealed the left wing impacted several 4 to 6 inch-diameter trees prior to separating from the aircraft. The airplane then spun to the left, with fuel from the severed wing splashing on the nose section of the airplane and onto the hot left engine. The fuel ignited and caused substantial damage to the left engine and forward left section of the fuselage.

Post-accident examination also revealed that the nose landing gear (NLG) had separated from its mount at the nose trunnion. Further investigation revealed that the left NLG trunnion lug had sheared from the trunnion assembly. The fractured lug was sent to the manufacturer for fractographic examination. The examination revealed a pre-existing crack at the surface of the NLG trunnion lug. The crack was approximately 0.015 inch deep at the time of final fracture. Subsequent investigation revealed that the fractured component was taken from a Cessna 310 airplane, and had accumulated approximately 20,000 service hours. According to maintenance records, on March 12, 2013, the nose gear attached tunnel and forward bulkhead were repaired as part of the filed insurance claim, and the nose gear trunnion assembly was replaced at this time.

Cessna Multi-engine Service Bulletin MEB88-5 (Revision 2), Nose Gear Trunnion/Replacement, stated the preferred inspection method for the side lug area was a surface eddy current inspection. An alternate fluorescent penetrant inspection may be used for those facilities without eddy current inspection capabilities. However, MEB88-5 was not a federally mandated requirement for all owner/operators to accomplish. Subsequently, the subject trunnion assembly installed on the accident airplane had received only a visual examination prior to installation.

Pilot Information

Certificate:	Private	**Age:**	53,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	January 2, 2013
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	January 9, 2012
Flight Time:	587 hours (Total, all aircraft), 120 hours (Total, this make and model), 480 hours (Pilot In Command, all aircraft), 22 hours (Last 90 days, all aircraft), 14 hours (Last 30 days, all aircraft)		

Co-pilot Information

Certificate:	Commercial; Flight instructor; Private	**Age:**	29,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	May 31, 2012
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	August 31, 2012
Flight Time:	1400 hours (Total, all aircraft), 20 hours (Total, this make and model), 1320 hours (Pilot In Command, all aircraft), 260 hours (Last 90 days, all aircraft), 84 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N37480
Model/Series:	414 UNDESIGNAT	**Aircraft Category:**	Airplane
Year of Manufacture:	1977	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	414-0958
Landing Gear Type:	Retractable - Tricycle	**Seats:**	
Date/Type of Last Inspection:	October 26, 2012 Annual	**Certified Max Gross Wt.:**	6349 lbs
Time Since Last Inspection:	3 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	9376 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	C91A installed, activated, did not aid in locating accident	**Engine Model/Series:**	TSIO-520 SER
Registered Owner:	TERRY LUIS A	**Rated Power:**	300 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	ACY,74 ft msl	**Distance from Accident Site:**	15 Nautical Miles
Observation Time:	11:54 Local	**Direction from Accident Site:**	127°
Lowest Cloud Condition:	Few / 1600 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	13 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	330°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.82 inches Hg	**Temperature/Dew Point:**	11°C / 4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Gaithersburg, MD (GAI)	**Type of Flight Plan Filed:**	VFR/IFR
Destination:	Hammonton, NJ (N81)	**Type of Clearance:**	VFR;IFR
Departure Time:	11:00 Local	**Type of Airspace:**	

Airport Information

Airport:	Hammonton Municipal Arpt N81	**Runway Surface Type:**	Asphalt
Airport Elevation:	65 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	03	**IFR Approach:**	None
Runway Length/Width:	3601 ft / 75 ft	**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Minor, 1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor, 1 None	**Latitude, Longitude:**	39.667499,-74.757774(est)

Administrative Information

Investigator In Charge (IIC):	Neylon, John
Additional Participating Persons:	Timothy Griffin; FAA/FSDO; Philadelphia, PA Steve Miller; Cessna Aircraft Company; Wichita, KS
Original Publish Date:	February 10, 2014
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=86595

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