



National Transportation Safety Board Aviation Accident Final Report

Location:	Burnsville, NC	Accident Number:	ATL06LA041
Date & Time:	02/01/2006, 1145 EST	Registration:	N814ER
Aircraft:	Cessna 500	Aircraft Damage:	Substantial
Defining Event:		Injuries:	4 None

Flight Conducted Under: Part 91: General Aviation - Executive/Corporate

Analysis

The right main landing gear collapsed on landing. According to the flight crew, after departure they proceeded to Mountain Air Airport, where they performed a "touch-and-go" landing. Upon raising the landing gear following the touch-and-go landing, they got an "unsafe gear" light. The crew stated they cycled the gear back down and got a "three green" normal indication. They cycled the gear back up and again got the "gear unsafe" light. They diverted to Greensboro, North Carolina, and upon landing in Greensboro the airplane's right main landing gear collapsed. After the accident, gear parts from the accident airplane were discovered on the runway at Mountain Air Airport. Metallurgical examination of the landing gear components revealed fractures consistent with overstress separation and there was no evidence of fatigue. Examination of the runway at Mountain Air Airport by an FAA Inspector showed evidence the accident airplane had touched down short of the runway.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's misjudged distance/altitude that led to an undershoot and the pilot's failure to attain the proper touchdown point.

Findings

Occurrence #1: UNDERSHOOT

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

1. (C) DISTANCE/ALTITUDE - MISJUDGED - PILOT IN COMMAND
2. (C) PROPER TOUCHDOWN POINT - NOT ATTAINED - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

3. TERRAIN CONDITION - ROUGH/UNEVEN
4. LANDING GEAR,MAIN GEAR - OVERLOAD
5. GO-AROUND - INITIATED - PILOT IN COMMAND

Occurrence #3: MAIN GEAR COLLAPSED

Phase of Operation: LANDING - ROLL

Factual Information

HISTORY OF FLIGHT

On February 1, 2006, at 1145 eastern standard time, a Cessna CE-500, N814ER, registered to and operated by Flite Services, Inc., touched down short of the runway while performing a touch-and-go landing at Mountain Air Airport, Burnsville, North Carolina. The corporate flight was operated under the provisions of Title 14 CFR Part 91. Visual meteorological conditions prevailed and an Instrument Flight Rules flight plan was filed. The pilot, co-pilot and two passengers were not injured, and the airplane sustained substantial damage. The flight originated from Asheville, North Carolina, on February 1, 2006, at 1130.

According to the flight crew, the departure from Asheville, was normal. The flight proceeded to Mountain Air Airport, Burnsville, North Carolina, where they performed a "touch-and-go." Following the touch-and-go, at about 1145, and upon raising the landing gear, they got an "unsafe gear" light. The crew cycled the gear back down and got a "three green" normal indication. They cycled the gear back up and again got the "gear unsafe" light. They cycled the gear three more times with the same results. The crew decided to return to Asheville, and upon extending the gear for a visual landing at Asheville, the right main landing gear green light did not illuminate. The crew stated that they performed all of the checklist procedures and asked the control tower personnel to visually look to see if the gear was down and that tower personnel reported that it was. The crew asked the tower personnel if the landing light was on, and tower personnel replied that it was not. According to the flight crew, they went through the emergency procedures again, but they had no luck in getting the landing gear to lock down. They said that there was no landing light and that they got the gear horn with the gear down and full flaps with the throttles at idle. The crew stated they were sure that the gear was out of the uplocks but not down and locked.

The crew stated that, after talking with maintenance personnel on the ground at Asheville, they decided to divert to Greensboro, North Carolina, where there were better facilities to handle the situation. One of the passengers had noticed that after the crew had recycled the gear the last time, a panel on the right wing was pushed up. The flight continued to Greensboro, at 150 knots with the gear down. Greensboro tower personnel cleared the flight for a visual approach. According to the crew, the landing was normal for the first 2,000 feet of roll out, then the right main landing gear collapsed. The crew said that, when the gear collapsed, they shut down both engines and the airplane veered off the right side of the runway into the grass. Both crewmembers and passengers exited the airplane through the main door with no injuries. The pilot stated that, he examined the right main landing gear after the airplane had been moved to the hangar, and it appeared to him that the landing gear failed due to metal fatigue. He said that, "where the gear was broken, there was evidence of old cracks with fresh breaks."

According to an FAA inspector the flight crew had attempted a landing at the Mountain Air Airport soon after their departure from Asheville. According to statements made to the FAA Inspector by the pilot and co-pilot, they performed only a low pass over the airport and did not touch down, and that no other landings or takeoffs were attempted prior to the landing at Greensboro. However, according to witnesses at the Mountain Air Airport, after seeing the airplane on the evening news, the owner of the private airport called the Greensboro FAA Flight Standards District Office (FSDO) and reported that the airplane crew talked with him on the airport's common traffic advisory frequency (CTAF) the afternoon of the accident and that

the airplane was observed attempting to land on the northwest runway, but it aborted the landing at the last moment. Later that afternoon, airplane landing gear parts were discovered on the runway.

PERSONNEL INFORMATION

A review of information on file with the FAA Airman's Certification Division, Oklahoma City, Oklahoma, revealed the pilot was issued a commercial pilot certificate on December 24, 2003, with ratings for airplane multi-engine land and instrument airplane, and he held a private pilot certificate for airplane single-engine land. In addition, the pilot held a type rating for the CE-500. The pilot held a first-class medical issued on March 23, 2005, with a restriction that he must have available glasses for near vision. The pilot reported that he had accumulated 2,500 total flight hours, of which 700 hours were in the Cessna CE-500. The pilot's last flight review was conducted on April 10, 2005.

A review of information on file with the FAA Airman's Certification Division, Oklahoma City, Oklahoma, revealed that the co-pilot was issued an airline transport pilot certificate on October 16, 2003, with ratings for airplane multi-engine land, and he held a commercial pilot certificate for airplane single-engine land and helicopter. In addition, the co-pilot held type ratings for CE-500, HS-125, IA-Jet, and LR-Jet. The co-pilot held a second-class medical certificate issued on March 23, 2005, with a restriction that he must have available glasses for near vision. The co-pilot reported that he had accumulated 13,000 total flight hours of which 1,000 hours were in the Cessna CE-500. The co-pilot's last flight review was conducted on August 25, 2005.

AIRCRAFT INFORMATION

A review of information provided by the pilot revealed that the last continuous airworthiness inspection was conducted on November 30, 2005. The airframe total time at the time of the accident was 12,008.3 hours.

METEOROLOGICAL INFORMATION

The 1317 surface weather observation at Piedmont Triad International Airport was wind 220-degrees at 6 knots, visibility 10 statute miles, sky clear, temperature 9 degrees Celsius, dew point temperature 3 degrees Celsius, and altimeter 30.02.

FLIGHT RECORDERS

The CVR was not retained for readout by NTSB due to the elapsed time from the accident to the final landing.

WRECKAGE AND IMPACT INFORMATION

Examination of the airplane by an FAA Inspector following the landing at Greensboro revealed several of the landing gear components were missing. Following a conversation with the owner of the Mountain Air Airport, the FAA inspector went to the airport, and retrieved the landing gear parts found on their runway. He stated that he took one of the large parts, about half of the right main landing gear trunnion, to the hangar where the accident airplane was stored, and positively identified the part as coming from the accident airplane. The broken trunnion fit exactly with the other half of the broken trunnion still attached to the airplane and that the trunnion had bent 30-degrees before breaking. While at Mountain Air, the inspector observed that the airplane had touched down short of the runway and below the airport grade on the side of the mountain.

ADDITIONAL INFORMATION

Examination of photographs of the failed landing gear component fracture surfaces by the NTSB Materials Laboratory found no indication of fatigue. The angle brace fracture on the landing gear trunnion showed deformation consistent with overstress compression buckling. The upper support showed twisting deformation consistent with the direction of the bend in the angle brace and downward bending consistent with the wheel moving aft relative to the upper support, all consistent with the overstress fracture.

Pilot Information

Certificate:	Commercial	Age:	39, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1 Without Waivers/Limitations	Last FAA Medical Exam:	09/01/2005
Occupational Pilot:		Last Flight Review or Equivalent:	04/01/2005
Flight Time:	2500 hours (Total, all aircraft), 700 hours (Total, this make and model), 2200 hours (Pilot In Command, all aircraft), 90 hours (Last 90 days, all aircraft), 30 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Co-Pilot Information

Certificate:	Airline Transport	Age:	49, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine	Toxicology Performed:	No
Medical Certification:	Class 2 With Waivers/Limitations	Last FAA Medical Exam:	03/01/2005
Occupational Pilot:		Last Flight Review or Equivalent:	08/01/2005
Flight Time:	13000 hours (Total, all aircraft), 1000 hours (Total, this make and model), 12750 hours (Pilot In Command, all aircraft), 80 hours (Last 90 days, all aircraft), 23 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N814ER
Model/Series:	500	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	500-280
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	11/01/2005, Continuous Airworthiness	Certified Max Gross Wt.:	12000 lbs
Time Since Last Inspection:		Engines:	2 Turbo Jet
Airframe Total Time:	12008.3 Hours at time of accident	Engine Manufacturer:	Pratt & Whitney
ELT:	Installed, not activated	Engine Model/Series:	JT-15D-1A
Registered Owner:	Flite Services, Inc.	Rated Power:	2200 lbs
Operator:	Flite Services, Inc.	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:		Distance from Accident Site:	
Observation Time:		Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	220°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	9° C
Precipitation and Obscuration:			
Departure Point:	Asheville, NC (AVL)	Type of Flight Plan Filed:	IFR
Destination:	Greensboro, NC (GSO)	Type of Clearance:	IFR
Departure Time:	1130 EST	Type of Airspace:	

Airport Information

Airport:	Mountain Air (2NC0)	Runway Surface Type:	Asphalt
Airport Elevation:	4432 ft	Runway Surface Condition:	Dry
Runway Used:	32	IFR Approach:	None
Runway Length/Width:	2900 ft / 50 ft	VFR Approach/Landing:	Straight-in

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	2 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	4 None	Latitude, Longitude:	35.870000, -82.347222

Administrative Information

Investigator In Charge (IIC):	Butch Wilson	Report Date:	06/27/2007
Additional Participating Persons:	Linda Falcon; Greensboro FSDO-05; Greensboro, NC		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).