



National Transportation Safety Board Aviation Accident Final Report

Location:	Sanford, FL	Accident Number:	ERA11LA221
Date & Time:	04/01/2011, 1545 EDT	Registration:	N6781X
Aircraft:	CESSNA 310F	Aircraft Damage:	Substantial
Defining Event:	Landing gear collapse	Injuries:	2 None
Flight Conducted Under:	Part 91: General Aviation - Instructional		

Analysis

The flight instructor and private pilot were performing touch-and-go landings. While retracting the landing gear, they heard a loud bang. The gear-up light illuminated, indicating that all three landing gears were retracted and the doors were closed. The instructor concluded that the noise came from the landing gear doors closing into each other. The flight continued, and two more landings were planned: one touch-and-go and one full stop. The landing gear appeared to operate normally during the touch-and-go. Upon extending the gear for the full stop landing, the gear-down light failed to illuminate. After checking the gear down indicating system, a visual check with the tower controllers confirmed that all three landing gears were in the down position. During touchdown, the nose gear collapsed. A postaccident examination of the nose gear assembly revealed that the nose landing gear strut reservoir lacked air pressure and the fluid level was very low. This underserviced condition caused binding in the nose gear fork assembly and failure of a nose gear push rod, which prevented the nose gear from extending to the full down and locked position.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of the nose landing gear due to inadequate servicing of the nose gear strut reservoir.

Findings

Aircraft	Nose/tail gear strut/axle - Incorrect service/maintenance (Cause) Gear extension and retract sys - Failure (Cause)
Personnel issues	Scheduled/routine maintenance - Other/unknown (Cause)

Factual Information

On April 1, 2011, at 1545 eastern daylight time, a Cessna 310F, N6781X, registered to a private individual, incurred substantial damage to the fuselage after the nose gear collapsed during landing rollout at Sanford Orlando International Airport (SFB), Sanford, Florida. The certified flight instructor (CFI) and his private pilot-rated dual student were not injured. The instructional flight was conducted under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed and no flight plan was filed. The flight originated from SFB at 1500.

The CFI reported that after takeoff, while retracting the landing gear, a loud “bang” was heard. It was assumed by the CFI that the noise came from the landing gear doors closing into each other. The gear-up light illuminated indicating that the landing gear were retracted and the doors were closed. The flight returned to SFB for two planned landings; first a touch-and-go and then a full stop. On the first landing; the gear were extended and a gear-down light illuminated. A touch-and-go was conducted without incident. Upon extending the gear for the second landing, the gear-down light failed to illuminate. The landing gear were recycled, and the gear light gave a gear-up indication. Another gear extension was attempted, and a gear-down indication was not received. The CFI contacted the SFB tower to request a low fly-by for a visual inspection of the gear position. The tower controller reported all three gear were down and the airplane was cleared to land. The touchdown on the main gear was normal; but as weight was applied to the nose wheel, the nose gear collapsed.

The airplane was examined by a Federal Aviation Administration (FAA) inspector under the direction of a NTSB investigator. The airplane was raised using aircraft jacks to take the weight off of the wheels. The nose gear shock strut trunnion assembly remained in the compressed position. Approximately one inch of the strut trunnion surface was visible. An attempt to retract the nose landing gear was unsuccessful, due to the strut fork assembly coming into contact with the nose landing gear door attachment brackets. The nose strut trunnion was manually extended out of the cylinder until approximately three inches of the piston surface was visible. The nose landing gear assembly was then manually raised up into the wheel well area and fully retracted. The nose landing gear strut trunnion reservoir was checked for air pressure and was totally empty of air. The strut trunnion reservoir was checked for fluid which was found to be very low. There were no signs of fluid leakage around the nose landing gear strut trunnion. A review of the maintenance logbooks did not reveal any prior discrepancies with the nose landing gear assembly.

History of Flight

Landing-landing roll	Landing gear collapse (Defining event)
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Flight Instructor Information

Certificate:	Airline Transport; Flight Instructor; Commercial	Age:	43, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
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 2 With Waivers/Limitations	Last Medical Exam:	05/17/2007
Occupational Pilot:	No	Last Flight Review or Equivalent:	10/19/2010
Flight Time:	2400 hours (Total, all aircraft), 300 hours (Total, this make and model), 1965 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	CESSNA	Registration:	N6781X
Model/Series:	310F	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	310-0081
Landing Gear Type:	Retractable - Tricycle	Seats:	5
Date/Type of Last Inspection:	02/11/2011, Annual	Certified Max Gross Wt.:	4600 lbs
Time Since Last Inspection:	23 Hours	Engines:	2 Reciprocating
Airframe Total Time:	3245 Hours	Engine Manufacturer:	CONT MOTOR
ELT:	C91 installed, not activated	Engine Model/Series:	I0-470 SERIES
Registered Owner:	Edward Moon	Rated Power:	260 hp
Operator:	Edward Moon	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	SFB, 55 ft msl	Observation Time:	1553 EDT
Distance from Accident Site:	0 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	0°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	26° C / 8° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	11 knots/ 19 knots, 290°	Visibility (RVR):	
Altimeter Setting:	29.84 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Sanford, FL (SFB)	Type of Flight Plan Filed:	None
Destination:	Sanford, FL (SFB)	Type of Clearance:	None
Departure Time:	1500 EDT	Type of Airspace:	

Airport Information

Airport:	Orlando Sanford International (SFB)	Runway Surface Type:	Asphalt
Airport Elevation:	55 ft	Runway Surface Condition:	Dry
Runway Used:	27	IFR Approach:	Visual
Runway Length/Width:	9601 ft / 150 ft	VFR Approach/Landing:	Full Stop

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None		

Administrative Information

Investigator In Charge (IIC):	Eric Alleyne	Adopted Date:	08/15/2012
Additional Participating Persons:	Bob Haynes; FAA/FSDO; Orlando, FL		
Publish Date:	08/15/2012		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=78739		

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