



Aviation Investigation Final Report

Location:	Atlantic City, New Jersey	Accident Number:	NYC07LA061
Date & Time:	January 31, 2007, 11:40 Local	Registration:	N20SS
Aircraft:	Cessna 310Q	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation - Executive/Corporate		

Analysis

After deployment of the landing gear prior to landing, the pilot noticed an unsafe gear indication. He recycled the landing gear and again got an unsafe condition. The pilot then hand-cranked the gear to the down position, but cranked it through the physical stop, breaking it. At touchdown, the left main landing gear was in an "over-center" condition, and collapsed, which caused substantial damage to the airplane. Examination of the airplane revealed a broken tab on the left main landing gear "squat" switch, which rendered the safe gear indicator inoperative.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The inoperative safe gear indicator light switch. Contributing to the accident was the pilot hand-cranking the landing gear past the physical stop.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: APPROACH - VFR PATTERN - BASE LEG/BASE TO FINAL

Findings

1. (C) LANDING GEAR, GEAR INDICATING SYSTEM - INOPERATIVE
2. (F) GEAR EXTENSION - IMPROPER - PILOT IN COMMAND

Occurrence #2: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: LANDING - ROLL

Findings

3. LANDING GEAR - COLLAPSED

Factual Information

On January 31, 2007, at 1140 eastern standard time, a Cessna 310Q, N20SS, was substantially damaged following a gear collapse after landing at Atlantic City International Airport (ACY), Atlantic City, New Jersey. The certificated commercial pilot was not injured. Visual meteorological conditions prevailed for the flight that originated at Easton/Newnam Field Airport (ESN), Easton, Maryland, about 1100. No flight plan was filed for the business flight that was conducted under 14 Code of Federal Regulations Part 91.

In a written statement, the pilot described an uneventful flight from Easton to Atlantic City. The pilot initiated a descent, and slowed the airplane for entry to the base leg of the runway-31 traffic pattern. The flaps were adjusted, the gear was lowered, and the pilot noted that all three green landing gear lights were illuminated.

Shortly after, the pilot noticed an unsafe gear indication and that two green main landing gear lights were extinguished. The pilot "recycled" the gear, initially got a safe gear indication, followed by an unsafe gear indication on the two main landing gear.

The pilot notified the tower controller, who advised the pilot that the gear appeared down as the airplane over flew the runway. A Federal Aviation Administration (FAA) airplane was flying in the vicinity, and the crew overheard the conversation between the pilot and the controller over the radio.

The pilot maneuvered the airplane away from the airport, and attempted to troubleshoot the problem according to the owner's manual on board the airplane. About that time, the FAA airplane was able to observe the landing gear, and the crew advised the pilot that the gear was down.

The airplane returned to the airport, and landed on the runway. During rollout, the left, right, and nose gear collapsed in sequence before the airplane departed the left side of the runway and struck a sign.

Examination of the airplane by FAA inspectors revealed substantial damage to the airframe.

On February 29, 2008, the mechanic who completed repairs on the accident airplane in the months following the accident, was interviewed by telephone. He explained the damage to the airplane, and how he believed the sequence of events prior to landing resulted in the accident.

According to the mechanic, the metal tab incorporated in the "squat" switch for the left main landing gear had fatigued and broken prior to the accident pilot moving the gear handle to the down position. As a result, the left main landing gear safe indication did not illuminate. The

pilot recycled the gear, and again the light would not illuminate because the switch was broken.

The mechanic believed that the pilot then retracted the gear, and deployed it manually. During the hand-crank deployment of the gear, the pilot cranked the gear past the mechanical stop, breaking it.

When the airplane touched down, the left main landing gear was in an "over center" condition, and the gear collapsed which resulted in substantial damage to the airplane.

The airplane was manufactured in 1972, and had accrued 3,236 total aircraft hours. The most recent annual inspection was completed December 28, 2006, at 3,222 aircraft hours.

The pilot held a commercial pilot certificate with ratings for airplane single engine land, multi-engine land, and instrument airplane. His most recent FAA second-class medical certificate was issued on April 7, 2005. The pilot reported 7,295 total hours of flight experience, 3,004 hours of which were in multi-engine airplanes, and 430 hours of which were in the Cessna 310.

At 1454, the weather reported at Atlantic City International Airport included clear skies and winds from 290 degrees at 14 knots, gusting to 20 knots. The visibility was 10 miles. The temperature was -1 degrees Celsius and the dew point was -13 degrees Celsius.

Pilot Information

Certificate:	Commercial; Flight instructor	Age:	55, 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 multi-engine; Airplane single-engine	Toxicology Performed:	No
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	April 1, 2005
Occupational Pilot:	No	Last Flight Review or Equivalent:	February 1, 2005
Flight Time:	7295 hours (Total, all aircraft), 430 hours (Total, this make and model), 6804 hours (Pilot In Command, all aircraft), 10 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N20SS
Model/Series:	310Q	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	310Q0521
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	December 1, 2006 Annual	Certified Max Gross Wt.:	5300 lbs
Time Since Last Inspection:	14 Hrs	Engines:	2 Reciprocating
Airframe Total Time:	3236 Hrs at time of accident	Engine Manufacturer:	Teledyne Continental
ELT:	Installed, not activated	Engine Model/Series:	IO-470-V6B
Registered Owner:	Eagle Works	Rated Power:	260 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,75 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	11:54 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	16 knots / 20 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	310°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.11 inches Hg	Temperature/Dew Point:	-1°C / -13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	EASTON, MD (ESN)	Type of Flight Plan Filed:	None
Destination:	ATLANTIC CITY, NJ (ACY)	Type of Clearance:	None
Departure Time:	11:00 Local	Type of Airspace:	

Airport Information

Airport:	Atlantic City International Ai ACY	Runway Surface Type:	Asphalt
Airport Elevation:	75 ft msl	Runway Surface Condition:	Dry
Runway Used:	31	IFR Approach:	None
Runway Length/Width:	10000 ft / 150 ft	VFR Approach/Landing:	Full stop;Precautionary landing;Traffic pattern

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:	39.454444,-74.572776

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian
Additional Participating Persons:	Dave Grasso; FAA/FSDO; Philadelphia, PA
Original Publish Date:	June 30, 2008
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=65287

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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](#).