



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Broomfield, CO	<b>Accident Number:</b>	DEN01LA119
<b>Date &amp; Time:</b>	07/01/2001, 1125 MDT	<b>Registration:</b>	N2129Q
<b>Aircraft:</b>	Cessna 177RG	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	2 None
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

During cruise flight, the pilot heard a loud "pop" and noticed the landing GEAR UP light was no longer illuminated and would not illuminate when he pushed the PUSH TO TEST button. When he tested the GEAR DOWN light, it illuminated. He slowed the airplane and cycled the landing gear, but to no avail. He then checked and reset the landing gear circuit breaker. He cycled the landing gear both electrically and manually. He was able to lock the nose landing gear by pulling a 2-g maneuver, but the main landing gear remained retracted. The pilot then landed with the nose gear extended and the main gears retracted. He was able to maintain a wings level attitude until the aircraft came to a stop approximately 250 feet down the runway. The aircraft then leaned onto its right stabilizer, crushing some spars and ribs. Post-accident examination revealed the hydraulic nose landing gear UP hose had failed.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: failure of the nose landing gear hydraulic UP hose, which resulted in a wheels-up landing..

## Findings

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Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION  
Phase of Operation: CRUISE - NORMAL

### Findings

1. (C) HYDRAULIC SYSTEM,LINE - BURST
2. REMEDIAL ACTION - NOT SUCCESSFUL - PILOT IN COMMAND

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Occurrence #2: WHEELS UP LANDING  
Phase of Operation: LANDING - ROLL

## Factual Information

On July 1, 2001, at 1125 mountain daylight time, a Cessna 177RG, N2129Q, owned and operated by the pilot, was substantially damaged during a wheels-up landing at the Broomfield-Jefferson County (Jeffco) Airport, Broomfield, Colorado. The private pilot and his passenger were not injured. Visual meteorological conditions prevailed, and a VFR flight plan had been filed for the personal flight being conducted under Title 14 CFR Part 91. The flight originated from Erie, Colorado, approximately 0830.

In his accident report, the pilot said approximately 30 minutes into the flight, he heard a loud "pop" or "bang" from the front of the aircraft. The aircraft's airspeed then dropped from a cruise speed of 155 mph to approximately 135 mph. The pilot then noticed the landing GEAR UP light was no longer illuminated. The GEAR UP light did not illuminate when he pushed the PUSH TO TEST button. When he tested the GEAR DOWN light, it illuminated. He slowed the airplane and cycled the landing gear, but to no avail. He then checked and reset the landing gear circuit breaker. He cycled the landing gear both electrically and manually. He then contacted Denver Flight Service Station for assistance and was directed to the Broomfield-Jefferson County (Jeffco) Airport for an emergency gear up landing. The pilot made a low pass and control tower personnel confirmed the landing gear was partially extended. He then proceeded to the Stanley Lake area, near Jeffco, to attempt to lower the landing gear. He said he made a dive with a 2-G pull-up. The maneuver successfully locked the nose landing gear, but the main landing gear remained retracted. The pilot returned to Jeffco and made another low pass for control tower personnel to confirm the position of the landing gear. He then landed with the nose gear extended and the main gears retracted. He said he was able to maintain a wings level attitude until the aircraft came to a stop approximately 250 feet down runway 29 Left. The aircraft then leaned onto its right stabilizer. The right stabilizer received damage to its tip, and the spars and ribs were bent. There was also damage to a tie down bolt and mounting plate.

Postaccident examination revealed the nose landing gear hydraulic UP hose had separated at the fitting, allowing the hydraulic fluid supply to be depleted. Airworthiness Directive (A.D.) 97-01-13, applicable to the Cessna 177RG, effective February 3, 1997, requires the replacing of any "Cessna P/N S51-10 [hose] that has a diagonal or spiral pattern external reinforcement wrap with a Cessna P/N S51-10 hose that has a criss-cross pattern external wrap. . . in accordance with the ACCOMPLISHMENT INSTRUCTIONS of Service Bulletin (SB) SEB96-15, dated October 18, 1996." According to the service bulletin, "some S51-10 type hoses shipped . . . between March 28, 1995, and June 28, 1996, may have been improperly manufactured. Installed hoses that were improperly manufactured may deteriorate and eventually result in delamination on the inner tube from the external wrap (and) may result in a hydraulic system . . . malfunction . . ."

A review of the aircraft's maintenance records revealed only two entries pertaining to the hydraulic hoses. The first, dated January 9, 1991, noted, "Tach 2611 . . . Serviced hydraulic power pack - see AD list in #1 book, replace 1 nose gear retract cyl(inder) hose - checked OK." The second, dated February 1, 1992, read, "Tach 2644 . . . Replace hydraulic hose P/N 2178-4-0134A to nose gear (re)tract cylinders . . ." Since these maintenance entries predated SEB96-15 and AD 97-01-13, the replacement hoses were not taken from the lot suspected of having been improperly manufactured. However, according to the "Airworthiness Directive Compliance Record," AD 97-01-13 had been complied with during the annual inspections of

January 2, 1999, and February 4, 2000.

While repairs were being made to the airplane, it was noted that the mechanics were referring to Cessna SEB92-8, dated April 17, 1992. The service bulletin stated that "certain S2178-4 series (blue) hydraulic hose assemblies should be replaced." No reason was given. Replacement hoses were designated S2888-4 series (black). The failed nose landing gear hydraulic UP hose was a blue- colored hose. According to the Cessna Aircraft Company, both SEB92-8 and SEB96-15 are still in effect, and the latter has not superceded the former.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	53, Male
<b>Airplane Rating(s):</b>	Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 3 Valid Medical--w/ waivers/lim.	<b>Last FAA Medical Exam:</b>	05/23/2000
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	04/21/2000
<b>Flight Time:</b>	529 hours (Total, all aircraft), 460 hours (Total, this make and model), 448 hours (Pilot In Command, all aircraft), 41 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N2129Q
<b>Model/Series:</b>	177RG	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	177RG0529
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	03/05/2001, Annual	<b>Certified Max Gross Wt.:</b>	2800 lbs
<b>Time Since Last Inspection:</b>	40 Hours	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	3152 Hours as of last inspection	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	I0-360-A1B6D
<b>Registered Owner:</b>	Larry L. Earnshaw	<b>Rated Power:</b>	200 hp
<b>Operator:</b>	Larry L. Earnshaw	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KBJC, 5670 ft msl	Distance from Accident Site:	
Observation Time:	1045 MDT	Direction from Accident Site:	
Lowest Cloud Condition:	Scattered / 6000 ft agl	Visibility	60 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	360°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.19 inches Hg	Temperature/Dew Point:	28° C / 13° C
Precipitation and Obscuration:			
Departure Point:	Erie, CO (48V)	Type of Flight Plan Filed:	VFR
Destination:	Wahoo, NE (AHQ)	Type of Clearance:	VFR
Departure Time:	0830 MDT	Type of Airspace:	

## Airport Information

Airport:	Broomfield-Jefferson County (BJC)	Runway Surface Type:	Asphalt
Airport Elevation:	5670 ft	Runway Surface Condition:	Dry
Runway Used:	29L	IFR Approach:	None
Runway Length/Width:	7004 ft / 75 ft	VFR Approach/Landing:	Full Stop

## Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	

## Administrative Information

Investigator In Charge (IIC):	Arnold W Scott	Report Date:	10/23/2001
Additional Participating Persons:	David F Gonzales; FAA Flight Standards District Office; Denver, CO		
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 <a href="mailto:pubinq@ntsb.gov">pubinq@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .		

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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](#).