



# Aviation Investigation Final Report

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<b>Location:</b>	Atlanta, Georgia	<b>Accident Number:</b>	ERA18LA176
<b>Date &amp; Time:</b>	May 29, 2018, 13:45 Local	<b>Registration:</b>	N86507
<b>Aircraft:</b>	Cessna 337	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Sys/Comp malf/fail (non-power)	<b>Injuries:</b>	2 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

The private pilot was conducting a cross-country, personal flight. He stated that, while on approach to the destination airport, he was unable to extend the landing gear. He declared an emergency and attempted to pump the landing gear down via the emergency gear-extension handle to no avail. He then observed a large puddle of red hydraulic fluid on the floorboards near the hydraulic pump. The pilot realized that he would not be able to extend the gear and conducted a gear-up landing, which resulted in substantial damage to the lower fuselage.

Postaccident examination of the airplane revealed that the hydraulic reservoir was nearly empty. When the emergency handle was activated, a stream of hydraulic fluid sprayed from the surface of the aluminum hydraulic line connecting the emergency handle/pump to the electric hydraulic pump that was mounted under and behind the pilot's instrument panel. Magnified visual examination of the leaking hydraulic line revealed an area of corrosion and pitting on the aluminum surface, which likely resulted in a loss of hydraulic pressure and the pilot's inability to extend the landing gear.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

An area of pitting and corrosion on the surface of the aluminum hydraulic line connecting the emergency handle/pump to the electric hydraulic pump, which resulted in a loss of hydraulic pressure and the pilot's inability to extend the landing gear.

## Findings

<b>Aircraft</b>	Hydraulic fluid - Fluid level
<b>Aircraft</b>	Main landing gear - Failure
<b>Aircraft</b>	Main landing gear - Fatigue/wear/corrosion

## Factual Information

### History of Flight

<b>Approach</b>	Miscellaneous/other
<b>Landing</b>	Sys/Comp malf/fail (non-power) (Defining event)

On May 29, 2018, about 1345 eastern daylight time, a Cessna 337E, N86507, was substantially damaged during a gear-up landing at the DeKalb-Peachtree Airport (PDK), Atlanta, Georgia. The private pilot and the passenger were not injured. The airplane was co-owned and operated by the pilot as a Title 14 Code of Federal Regulations Part 91 personal flight. Visual meteorological conditions prevailed, and no flight plan was filed for the flight that departed North Perry Airport (HWO), Hollywood, Florida, about 0945.

The pilot stated that he was unable to extend the landing gear while on approach to the airport. He declared an emergency and flew north of the airport where he attempted to pump the landing gear down via the emergency gear-extension handle. The pilot was unable to pump the gear down and observed a large puddle of red hydraulic fluid on the floorboards near the hydraulic pump. The pilot realized that he would not be able to extend the gear and made a gear-up landing on runway 21R, which resulted in substantial damage to the lower fuselage.

A postaccident examination of the airplane revealed that when the emergency hydraulic pump actuator, located between the cockpit seats, was activated very little hydraulic resistance was noted when the emergency gear-extension handle was pumped. The hydraulic reservoir was nearly depleted. Further examination revealed that, as the emergency handle was activated, a stream of hydraulic fluid sprayed from the surface of the aluminum line connecting the emergency handle/pump to the electric hydraulic pump that was mounted under and behind the instrument panel of the pilot's side. The line was about 23 inches long. The plastic sheathing protecting the line was intact and removed to facilitate examination of the leaking area. There were no areas of line chafing noted on the line and no adjacent structure where chafing would occur. The leaking hydraulic line was removed and examined. A visual examination using 10x magnification revealed an area of corrosion and pitting on the aluminum surface. The affected area was about 0.75 inches long and covered about half the circumference of the tube.

The pilot held a private pilot certificate with a rating for airplane single-engine land. His last Federal Aviation Administration (FAA) second-class medical was issued on December 12, 2017.

Weather reported at the airport at 1359 included wind from 140° at 9 knots, visibility 10 miles, few clouds at 3,800 ft, scattered clouds at 4,900 ft, broken clouds at 6,000 ft, temperature 26° C, dew point 22° C, and an altimeter setting of 29.82 inHg.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	45, 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>	3-point
<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 2 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	December 12, 2016
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	May 29, 2018
<b>Flight Time:</b>	3087 hours (Total, all aircraft), 387 hours (Total, this make and model)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N86507
<b>Model/Series:</b>	337 E	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1969	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	33701212
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	6
<b>Date/Type of Last Inspection:</b>	June 1, 2016 Annual	<b>Certified Max Gross Wt.:</b>	4440 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	2 Reciprocating
<b>Airframe Total Time:</b>	1925.2 Hrs as of last inspection	<b>Engine Manufacturer:</b>	CONT MOTOR
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	IO-360 SER
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	210 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	PDK,998 ft msl	<b>Distance from Accident Site:</b>	0 Nautical Miles
<b>Observation Time:</b>	13:59 Local	<b>Direction from Accident Site:</b>	0°
<b>Lowest Cloud Condition:</b>	Few / 3800 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Broken / 6000 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	9 knots /	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>	140°	<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>	29.81 inches Hg	<b>Temperature/Dew Point:</b>	26°C / 22°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Atlanta, GA (PDK )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Atlanta, GA (PDK )	<b>Type of Clearance:</b>	VFR
<b>Departure Time:</b>		<b>Type of Airspace:</b>	Class D

## Airport Information

<b>Airport:</b>	Dekalb-Peachtree PDK	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	998 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	21R	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	3746 ft / 150 ft	<b>VFR Approach/Landing:</b>	Full stop

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	1 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 None	<b>Latitude, Longitude:</b>	33.875556,-84.30194(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Read, Leah
<b>Additional Participating Persons:</b>	Vincent English; FAA/FSDO; Atlanta, GA
<b>Original Publish Date:</b>	November 6, 2019
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=97557">https://data.nts.gov/Docket?ProjectID=97557</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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](#).