



Aviation Investigation Final Report

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

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

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

Factual Information

History of Flight

Approach	Miscellaneous/other
Landing	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

Certificate:	Private	Age:	45,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	December 12, 2016
Occupational Pilot:	No	Last Flight Review or Equivalent:	May 29, 2018
Flight Time:	3087 hours (Total, all aircraft), 387 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

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

Meteorological Information and Flight Plan

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

Airport Information

Airport:	Dekalb-Peachtree PDK	Runway Surface Type:	Asphalt
Airport Elevation:	998 ft msl	Runway Surface Condition:	Dry
Runway Used:	21R	IFR Approach:	None
Runway Length/Width:	3746 ft / 150 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:	33.875556,-84.30194(est)

Administrative Information

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

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](#).