



# Aviation Investigation Final Report

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<b>Location:</b>	Fairbanks, Alaska	<b>Accident Number:</b>	ANC18LA048
<b>Date &amp; Time:</b>	June 22, 2018, 17:30 Local	<b>Registration:</b>	N3125D
<b>Aircraft:</b>	Cessna 180	<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

According to the pilot, he was landing with a right crosswind, and after touchdown, as the airplane began to decelerate, he applied left brake to maintain directional control. He stated that the left brake pedal was "soft" and traveled to its full forward limit. The airplane weathervaned and skidded sideways before the left main wheel went off the landing area and into brush. The left wing and left horizontal stabilizer impacted terrain, which resulted in substantial damage. The pilot noted in a postflight examination that the brake line had separated at the compression fitting near the brake caliper where the brake line transitioned from a rigid line to a flexible line.

A laboratory examination of the brake line and its components revealed that the interior surface of the failed end had circumferential marks consistent with formation of a flared end with a flaring tool. The sleeve was trapped within the nut from the failed end, and deposits of gray metal appearing consistent with deformed brake tube material were observed deposited on internal threads of the nut.

According to Federal Aviation Administration Advisory Circular AC 43-13-1B, "Acceptable Methods, Techniques, and Practices – Aircraft Inspection and Repair," a double flare is used on soft aluminum tubing having a 3/8-inch outside diameter or less. No evidence of folded walls consistent with a double flare was noted at either end of the brake line tube.

No records could be found that showed the manufacture or assembly date of the fractured brake line components.

## Probable Cause and Findings

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

The failure of the brake line tube due to an improper flare.

**Findings**

<b>Aircraft</b>	Brake - Failure
<b>Aircraft</b>	Brake - Related maintenance info
<b>Personnel issues</b>	(general) - Other

## Factual Information

### History of Flight

Landing-landing roll	Sys/Comp malf/fail (non-power) (Defining event)
Landing-landing roll	Loss of control on ground

On June 22, 2018, about 1730 Alaska daylight time, a tailwheel equipped Cessna 180 airplane, N3125D, sustained substantial damage during an off-airport landing at Upper St George Creek, about 50 miles south of Fairbanks, Alaska. The airplane was registered to and operated by the pilot as a 14 *Code of Federal Regulations* (CFR) Part 91 visual flight rules personal flight when the accident occurred. The private pilot and passenger were uninjured. Visual meteorological conditions prevailed, and no flight plan had been filed. The flight departed Fairbanks International Airport (PAFA), Fairbanks, Alaska about 1700.

According to the pilot, he was landing with a right crosswind and after touchdown, as the airplane began to decelerate, he applied left brake in an effort to maintain directional control. He stated that the left rudder/brake pedal was "soft" and traveled to its full forward limit and directional control was lost. The airplane weathervaned into the wind and skidded sideways before the left main wheel went off the cleared landing area and into brush. The left wing and left horizontal stabilizer subsequently impacted terrain, which resulted in substantial damage.

Upon exiting the airplane, the pilot found the brake line had separated at the compression fitting near the brake caliper where the brake line transitioned from a rigid line to a flexible line.

The brake line tube and fitting hardware was removed from the airplane and sent to the NTSB Materials Laboratory in Washington DC for further evaluation. The interior surface of the failed end had circumferential marks up to 0.136 inch from the end consistent with the formation of a flared end with a flaring tool. The sleeve was trapped within the nut from the failed end, and deposits of gray metal appearing consistent with deformed brake tube material was observed deposited on internal threads of the nut up to 3 threads from the end of the sleeve.

According to Federal Aviation Administration Advisory Circular AC 43-13-1B, *Acceptable Methods, Techniques, and Practices – Aircraft Inspection and Repair*, a double flare is used on soft aluminum tubing having a 3/8-inch outside diameter or less. No evidence of folded walls consistent with a double flare was noted at either end of the submitted brake line tube.

No records could be located that showed the manufacture or assembly date of the fractured brake line components.

## 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>	Unknown
<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 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	April 30, 2018
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	April 30, 2017
<b>Flight Time:</b>	181 hours (Total, all aircraft), 132 hours (Total, this make and model), 145 hours (Pilot In Command, all aircraft), 12 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N3125D
<b>Model/Series:</b>	180	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1955	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	31923
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	February 7, 2018 Annual	<b>Certified Max Gross Wt.:</b>	2550 lbs
<b>Time Since Last Inspection:</b>	11 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	3192.8 Hrs as of last inspection	<b>Engine Manufacturer:</b>	CONT MOTOR
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	O-470 SERIES
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	225 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>	PAFA,432 ft msl	<b>Distance from Accident Site:</b>	37 Nautical Miles
<b>Observation Time:</b>	00:53 Local	<b>Direction from Accident Site:</b>	3°
<b>Lowest Cloud Condition:</b>	Scattered / 4500 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Broken / 6000 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	14 knots / 18 knots	<b>Turbulence Type Forecast/Actual:</b>	/ Unknown
<b>Wind Direction:</b>	280°	<b>Turbulence Severity Forecast/Actual:</b>	/ Unknown
<b>Altimeter Setting:</b>	29.9 inches Hg	<b>Temperature/Dew Point:</b>	20°C / 11°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	FAIRBANKS, AK (FAI )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Fairbanks, AK (AK7 )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>		<b>Type of Airspace:</b>	Class E

## Airport Information

<b>Airport:</b>	GOLD KING CREEK AK7	<b>Runway Surface Type:</b>	Dirt
<b>Airport Elevation:</b>	1720 ft msl	<b>Runway Surface Condition:</b>	Dry;Vegetation
<b>Runway Used:</b>		<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<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>	64.192779,-147.946105(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Williams, David
<b>Additional Participating Persons:</b>	Tom Dehart; FAA; Anchorage, AK
<b>Original Publish Date:</b>	June 8, 2020
<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=97569">https://data.nts.gov/Docket?ProjectID=97569</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](#).