



# Aviation Investigation Final Report

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<b>Location:</b>	Salida, Colorado	<b>Accident Number:</b>	CEN17LA162
<b>Date &amp; Time:</b>	April 19, 2017, 19:10 Local	<b>Registration:</b>	N9589T
<b>Aircraft:</b>	Cessna 210	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Fuel starvation	<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

The private pilot was landing the airplane at the conclusion of a cross-country flight when the engine experienced a total loss of power in the airport traffic pattern. The pilot attempted to restart the engine without success and subsequently landed the airplane in a field, where it impacted a fence and irrigation equipment. The pilot stated the right fuel tank was selected at the time of the accident. Postaccident examination revealed that the right tank contained 14 to 15 gallons of fuel, and that the left fuel tank contained about 1 gallon of fuel. The fuel selector was in the right tank position. The engine functioned normally during a postaccident test run. Given the lack of engine anomalies, it is likely that the airplane was operating on the left tank at the time of the accident, and the loss of engine power was the result of fuel starvation; it is likely that the pilot moved the fuel selector to the right tank position during his attempt to restart the engine.

## Probable Cause and Findings

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

The pilot's inadequate fuel management, which resulted in a total loss of engine power due to fuel starvation.

## Findings

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<b>Personnel issues</b>	Use of equip/system - Pilot
<b>Aircraft</b>	Fuel - Fluid management
<b>Personnel issues</b>	Fuel planning - Pilot

## Factual Information

### History of Flight

<b>Approach-VFR pattern base</b>	Fuel starvation (Defining event)
<b>Approach-VFR pattern base</b>	Loss of engine power (total)
<b>Landing-landing roll</b>	Collision with terr/obj (non-CFIT)

On April 19, 2017, about 1910 mountain daylight time, an Cessna 210 airplane, N9589T, impacted a fence and irrigation equipment during an off airport forced landing while on a visual approach to the Harriet Alexander Field Airport (ANK), Salida, Colorado. The private pilot was not injured, and the airplane was substantially damaged. The airplane was being operated by the pilot as a 14 *Code of Federal Regulations* Part 91 business flight. Visual meteorological conditions existed at the airport at the time of the accident, and no flight plan was filed. The flight originated from Page Municipal Airport (PGA), Page, Arizona, about 1700.

The pilot was delivering the airplane to a new owner in Denver and was landing at ANK for fuel. She stated she flew the first hour and thirty minutes with the left fuel tank selected then she switched to the right fuel tank for the remainder of the flight. The en route portion of the flight was uneventful. She stated the fuel mixture was leaned during the flight and increased to full rich as she descended. She stated that she entered the ANK traffic pattern, turned onto base leg, and after leveling the wings, noticed "everything went quiet." She attempted to restart the engine with no success. Unable to make it to the runway, she chose a field in which to land. The airplane landed hard and contacted a fence and irrigation equipment during the landing roll resulting in substantial damage to the right wing.

The ANK airport manager who assisted in removing the airplane from the field reported they drained 14 to 15 gallons of fuel from the right wing and about 1 gallon of fuel from the left wing prior to moving the airplane.

An examination of the airframe and engine were conducted on May 5, 2017 at ANK. The upper engine cowling had been removed from the airplane. A visual inspection of the engine was conducted, and no impact damage was noted. The wings had been removed from the airplane during the wreckage retrieval. The airplane was moved from a hangar to an open ramp and secured.

An examination of the engine was conducted during which the top spark plugs were removed and appeared to have normal color and wear signatures. The cylinders were examined with a lighted boroscope. The cylinder valves were intact with normal combustion signatures. Thumb compression was achieved when the propeller was rotated by hand. Both magnetos produced spark at the ignition leads and the impulse couplers released normally. A temporary fuel supply was connected to the right-wing fuel supply port and a bucket was placed under the right tank fuel return port. The fuel inlet b-nut was removed from the fuel manifold and the boost pump was turned on. Fuel flow was verified at the fuel delivery hose. The fuel inlet hose was reinstalled on the fuel manifold. Cylinder No. 5 fuel line was removed from the injector. The fuel boost pump was turned on and fuel flow was verified through the line which was subsequently reinstalled.

The fuel system was primed, and an attempt was made to start the engine. This was performed twice and both times the engine did not start. The No.6 injector nozzle was removed, the boost pump turned on and it was verified that fuel was flowing to the injector nozzle. A third attempt to start the engine was successful and the engine was run at idle for several minutes to warm up. The throttle was then advanced, and the engine rpm responded accordingly. The fuel mixture was leaned to account for the high elevation. The rpm increased by 150 rpm and the engine began to run more smoothly. A magneto check was performed at 1,700 rpm and a 100-rpm drop was noted with each magneto. Engine power was increased, and the engine ran smoothly until the mixture was enriched at which time it began to run rough, although it continued to run. The engine power was then decreased to idle, the mixture control was moved to the cutoff position, and the engine stopped.

It was noted that the exhaust gas temperature gauge was inoperative, and the cylinder head temperature gauge indicated a single cylinder value. The fuel gauge operated normally. The manifold gauge indicated atmospheric pressure prior to the engine start but did not operate during the engine run.

The examination did not reveal any preimpact failures/malfunctions that would have precluded normal operation of the engine.

### Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	34,Female
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	4-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 3 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	April 16, 2013
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	April 6, 2017
<b>Flight Time:</b>	264.3 hours (Total, all aircraft), 3.7 hours (Total, this make and model), 189.3 hours (Pilot In Command, all aircraft), 76.5 hours (Last 90 days, all aircraft), 16.8 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N9589T
<b>Model/Series:</b>	210	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1960	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	57389
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	January 10, 2017 Annual	<b>Certified Max Gross Wt.:</b>	2900 lbs
<b>Time Since Last Inspection:</b>	10 Hrs	<b>Engines:</b>	Reciprocating
<b>Airframe Total Time:</b>	4621.08 Hrs at time of accident	<b>Engine Manufacturer:</b>	Continental
<b>ELT:</b>	C91A installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	IO-470-E
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	260 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>	ANK,7523 ft msl	<b>Distance from Accident Site:</b>	1 Nautical Miles
<b>Observation Time:</b>	19:15 Local	<b>Direction from Accident Site:</b>	60°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	4 knots / None	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	280°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.2 inches Hg	<b>Temperature/Dew Point:</b>	14°C / -5°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Page, AZ (PGA )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Salida, CO (ANK )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	17:00 Local	<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>	Harriet Alexander Field Airpor ANK	<b>Runway Surface Type:</b>	
<b>Airport Elevation:</b>	7523 ft msl	<b>Runway Surface Condition:</b>	Unknown
<b>Runway Used:</b>		<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	Forced landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	38.545555,-106.033058

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Sullivan, Pamela
<b>Additional Participating Persons:</b>	Azra Caudill; FAA; Denver, CO Michael H Council; Continental Motors; Mobile, AL
<b>Original Publish Date:</b>	November 6, 2018
<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.ntsb.gov/Docket?ProjectID=95033">https://data.ntsb.gov/Docket?ProjectID=95033</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](#).