



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	Deport, Texas	Accident Number:	CEN18LA113
Date & Time:	March 2, 2018, 16:25 Local	Registration:	N3733X
Aircraft:	Aero Commander 100-180	Aircraft Damage:	Substantial
Defining Event:	Fuel contamination	Injuries:	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot reported that the airplane had been parked outside and exposed to an extended period of rainfall in the days leading to the accident. On the day before the accident, the pilot drained nearly 2 gallons of water from the fuel system before he saw clean, blue fuel. He subsequently repositioned the airplane on the ramp to see if he could get more water out of the tanks and installed new gaskets for the fuel caps. On the day of the accident, the pilot sumped the fuel system and found a small amount of water during the first check but reported that it was clear on the second check. During the pre-takeoff engine run-up, the airplane operated normally, and the pilot chose to depart.

About 25 minutes after takeoff, the pilot executed a steep turn about 500 ft above ground level. About 1 minute after leveling off, the engine sputtered once and experienced a total loss of power. His attempt to restart the engine was unsuccessful. The pilot performed a forced landing to a field but was unable to stop the airplane before hitting trees during the landing roll. He reported that there were no mechanical malfunctions or failures with the airplane that would have precluded normal operation before the loss of engine power. Postaccident examination of the airplane revealed that the right wing was separated from the airframe and contained no fuel. The left wing was about 1/2 full, but the fuel was not sampled. The fuel filler neck and cap showed large amounts of rust, indicative of inadequate maintenance of the fuel caps, which would have allowed water to enter the neck and tanks. It is likely that precipitation entered the fuel system around the poorly-maintained fuel filler and cap, which resulted in water contamination of the fuel, and that there was water remaining in the system even after the pilot drained large amounts of water before the flight, which resulted in the subsequent loss of engine power.

Probable Cause and Findings

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

A total loss of engine power due to water contamination of the fuel system. Contributing to the accident was the pilot/owner's inadequate maintenance of the fuel caps.

Findings

Aircraft	Fuel - Fluid condition
Aircraft	Water - Inadequate inspection
Personnel issues	Preflight inspection - Pilot
Aircraft	Fuel - Incorrect service/maintenance
Aircraft	Altitude - Not specified

Factual Information

History of Flight

Prior to flight	Fuel contamination (Defining event)
Maneuvering	Loss of engine power (total)
Landing	Off-field or emergency landing
Landing-landing roll	Collision with terr/obj (non-CFIT)

On March 2, 2018, about 1625 central standard time, an Aero Commander 100-180, N3733X, sustained substantial damage when it hit a tree during a forced landing to a field after a total loss of engine power near Deport, Texas. The pilot received minor injuries. The airplane was owned and operated by the pilot under the provisions of the 14 *Code of Federal Regulations* Part 91 as a personal flight. Visual meteorological conditions prevailed at the time of the flight, which was not operated on a flight plan. The flight departed from the Cox Field Airport (PRX), Paris, Texas, about 1600 on a local flight.

The pilot reported that he attempted to fly his airplane the day before the accident, but he had maintenance problems and decided not to fly. He reported that there had been an extended period of rain in area and his airplane was parked on the airplane ramp during that time. During the preflight inspection, he sumped the fuel twice with about 4oz of water in the samples. The airplane had not been flown since January 28, 2018, and the battery was "completely dead." The battery was charged enough to get the engine started and he taxied to the run-up area. During the magneto checks, the engine "died," and he needed assistance to get the engine running again. While waiting for the assistance to arrive start the engine again, he decided to recheck the fuel system. He reported that he sumped thirty 8oz bottles of water from the fuel system before he saw clean blue fuel. After getting the engine started again, he taxied back to the ramp and tied the airplane down. He reported that the right wing was sloping to the west (right wing down).

On the day of the accident flight, a mechanic charged the battery. During the preflight inspection, the pilot sumped the fuel system and found a small amount of water during the first check, but it was clear on the second check. During the run-up, the airplane operated normally, and he departed.

The pilot reported that after flying for about 25 minutes, he executed a left turn at a 45° bank angle. He stated that about 1 minute after leveling off at 500 ft above ground level, the engine sputtered once and stopped producing power. His attempt to restart the engine was unsuccessful. He executed a forced landing to a field but was unable to stop the airplane before hitting trees during the landing roll.

The pilot reported that on the day of the accident, he purchased gasket material and made "additional gaskets for the fuel cap hoping that if water got in that way this might stop it." He reported that there were no preaccident mechanical malfunctions or failures with the airplane that would have precluded normal operation.

An FAA inspection of the airplane's filler neck and cap showed large amounts of rust.

Pilot Information

Certificate:	Private	Age:	71,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Lap only
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Without waivers/limitations	Last FAA Medical Exam:	November 4, 2016
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	170 hours (Total, all aircraft), 73 hours (Total, this make and model), 120 hours (Pilot In Command, all aircraft), 8 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aero Commander	Registration:	N3733X
Model/Series:	100-180	Aircraft Category:	Airplane
Year of Manufacture:	1968	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	5041
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	August 10, 2017 Annual	Certified Max Gross Wt.:	2450 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	Lycoming
ELT:	C91 installed, activated, did not aid in locating accident	Engine Model/Series:	O-320-AA2B
Registered Owner:		Rated Power:	180 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:	PRX, 547 ft msl	Distance from Accident Site:	9 Nautical Miles
Observation Time:	16:35 Local	Direction from Accident Site:	320°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	7 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	110°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.26 inches Hg	Temperature/Dew Point:	18°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Paris, TX (PRX)	Type of Flight Plan Filed:	None
Destination:	Paris, TX (PRX)	Type of Clearance:	None
Departure Time:	16:00 Local	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	33.52, -95.337776

Administrative Information

Investigator In Charge (IIC):	Silliman, James
Additional Participating Persons:	Chuck Kuykendall; FAA North Texas FSDO; Irving, TX
Original Publish Date:	March 18, 2019
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=96819

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