Aviation Investigation Final Report

Location:	Shelburne, Vermont	**Accident Number:**	ERA18LA111
Date & Time:	March 16, 2018, 14:45 Local	**Registration:**	N761DV
Aircraft:	Cessna 210	**Aircraft Damage:**	Substantial
Defining Event:	Fuel starvation	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Aerial observation		

Analysis

The commercial pilot stated that he did not visually check either fuel tank before takeoff because he had observed the airplane being fueled the day before; he assumed that the tanks were full (44.5 gallons of usable fuel per tank, 89 gallons total) and that he would have sufficient fuel (6.5 hours) for his estimated 5-hour aerial survey flight. He departed with the fuel selector positioned to the left tank; his normal routine was to switch fuel tanks every hour for the first 4 hours of flight. About 3 hours into the flight, the engine lost total power. The pilot switched the fuel selector to the right tank and attempted to restart the engine to no avail; he made a forced landing to a snow-covered field, which resulted in substantial damage to the fuselage, an engine mount, and the firewall. Postaccident examination revealed that the left- and right-wing fuel tanks were undamaged, that both fuel caps were secure, and that there was no evidence of leaks. The left tank was empty, and 33 gallons of fuel were drained from the right tank. Visual examination of the engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation. Although the pilot indicated that his typical routine was to switch fuel tanks every hour, given the amount of fuel remaining in the right tank, it is likely that the pilot did not adequately manage the fuel supply during flight, which resulted in the total loss of engine power due to fuel starvation.

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

Personnel issues	Use of equip/system - Pilot
Aircraft	Fuel - Fluid management
Aircraft	Fuel selector/shutoff valve - Incorrect use/operation

Factual Information

History of Flight

Maneuvering	Fuel starvation (Defining event)
Maneuvering	Loss of engine power (total)
Emergency descent	Off-field or emergency landing
Landing	Collision with terr/obj (non-CFIT)

On March 16, 2018, about 1445 eastern daylight time, a Cessna 210M, N761DV, sustained substantial damage during a forced landing after a total loss of engine power near Shelburne, Vermont. The commercial pilot was not injured. The airplane was registered to and operated by GV Air, Medford, Oregon, as a Title 14 *Code of Federal Regulations* Part 91 aerial observation flight. Visual meteorological conditions prevailed, and no flight plan was filed for the flight that originated at the Burlington International Airport (BTV), Burlington, Vermont, about 1140.

The pilot stated that he conducted a preflight inspection of the airplane but did not visually check either fuel tank because he had observed the airplane being fueled the day before and he assumed the tanks were full (44.5 gallons usable per tank, 89 gallons total). The pilot said that the airplane burned about 13.5 gallons per hour and had a total fuel endurance of 6.5-hours, which was sufficient for his planned aerial survey flight of 5-hours. The pilot said he departed on the left tank and his normal routine was to switch fuel tanks every hour for the first 4 hours of flight. At 1435, almost 3 hours into the flight, with the fuel selector on the left tank, the engine abruptly stopped producing power. The pilot pushed the mixture control full forward and turned the fuel pump on. He then switched the fuel selector to the right tank and attempted to re-start the engine, but was unsuccessful , and he made a forced landing on a snow-covered field. The airplane came to rest upright and the nose wheel had separated, which resulted in substantial damage to the fuselage, an engine mount, and the firewall. The outboard section of the right wing was also damaged.

Postaccident examination of the airplane revealed the left and right-wing fuel tanks were undamaged and both fuel caps were secure. The left-wing fuel tank was empty, and about 33 gallons of fuel were drained from the right tank. Further examination of the fuel system revealed no evidence of leaks and there was no staining on the airplane or area surrounding the airplane. Visual examination of the engine revealed no mechanical deficiencies.

The pilot held a commercial pilot certificate with ratings for airplane single-engine land and instrument airplane. He reported a total of 521 hours of flight experience, of which, 65 hours were in the same make and model as the accident airplane. His last Federal Aviation Administration (FAA) second-class medical certificate was issued on November 18, 2017.

Weather reported at BTV at 1454 was wind from 290° at 11 knots, visibility 10 miles, scattered clouds at 3,600 ft, overcast clouds at 7,000 ft, temperature -3° C, dewpoint -12° C, and a barometric pressure setting of 29.69 inches Hg.

Pilot Information

Certificate:	Commercial	**Age:**	24,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	November 28, 2017
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	November 18, 2017
Flight Time:	521.4 hours (Total, all aircraft), 65 hours (Total, this make and model), 450 hours (Pilot In Command, all aircraft), 131 hours (Last 90 days, all aircraft), 60 hours (Last 30 days, all aircraft), 4.4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N761DV
Model/Series:	210 M	**Aircraft Category:**	Airplane
Year of Manufacture:	1977	**Amateur Built:**	
Airworthiness Certificate:	Restricted (Special)	**Serial Number:**	21062182
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	August 1, 2017 Annual	**Certified Max Gross Wt.:**	3803 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	10030.7 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO 520 SERIES
Registered Owner:		**Rated Power:**	285 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:	BTV,337 ft msl	**Distance from Accident Site:**	9 Nautical Miles
Observation Time:	14:54 Local	**Direction from Accident Site:**	40°
Lowest Cloud Condition:	Scattered / 3600 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 7000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	11 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	290°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	29.69 inches Hg	**Temperature/Dew Point:**	-3°C / -12°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Burlington, VT (BTV)	**Type of Flight Plan Filed:**	None
Destination:	Burlington, VT (BTV)	**Type of Clearance:**	VFR flight following
Departure Time:	11:40 Local	**Type of Airspace:**	Class C

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	44.380554,-73.2275(est)

Administrative Information

Investigator In Charge (IIC):	Read, Leah
Additional Participating Persons:	Paul Gallant; FAA/FSDO; Portland, ME
Original Publish Date:	May 29, 2019
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=96906

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