



SAFETY GRAM

May 2020

We're getting into one of the most beautiful times of the year (unless you're in Texas where it's already 90 degrees out!) when most pilots want to be traveling with their friends and family to new and different locations. If your Aero Club is currently allowing flights for current and qualified pilots, I highly recommend you looking into a new destination to fly to for a \$100 hamburger. Once you find a location to go to, don't forget to *properly* flight plan. It always seems like the flights that you least expect something to happen, it does. Folks become complacent when they feel that they are in their safe zone and could end up short on fuel because of unexpected winds or turbulence or being unaware of a TFR that popped up. You should always be checking to ensure your flight is within the Aero Club guid lines for your proficiency. Are you flying at night? Are the ceilings high enough to maintain 1K ft AGL throughout the flight? Are you traveling outside of the local area? Does the airport at your intended destination meet the requirements in the AFMAN? What other considerations do you need to make to fly to a new destination? Now is a great time to review the Air Force requirements. Proper flight planning is the key to keeping you and your passengers as safe as possible.

The accident report attached goes to show what can happen without proper flight planning when fuel starvation occurs. Let's not have this happen at any Air Force Aero Clubs! To reiterate what everyone else is saying...sanitize the aircraft, being careful of aircraft avionics, any tools/materials you use within the Aero Club, be sensitive to your distance between other members in the Aero Club and wash your hands!

CONTINUE TO FLY SAFE!

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National Transportation Safety Board Aviation Accident Final Report

Location:	McNeil Island, WA	Accident Number:	WPR16LA090
Date & Time:	03/26/2016, 1315 PDT	Registration:	N1151M
Aircraft:	CESSNA 172L	Aircraft Damage:	Substantial
Defining Event:	Fuel starvation	Injuries:	1 None
Flight Conducted Under:	Part 91: General Aviation - Instructional		

Analysis

The student pilot departed on the solo cross-country flight with about 4 hours of fuel onboard. About 2 hours into the flight, he noticed that the left tank fuel gauge was indicating almost empty. He was not concerned about the indication, stating that he had been trained not to rely on the accuracy of the fuel gauges. However, after landing at one of the intermediate airports along his route of flight, he did not visually check the fuel levels at the tank filler necks. About 45 minutes after takeoff from that airport, the engine experienced a partial loss of power. Concerned that performing troubleshooting steps could further exacerbate the situation, the student did not follow any emergency checklists. For the next 5 minutes, the engine continued to operate intermittently as the airplane gradually descended, then experienced a total loss of power. The student made a forced landing to a field, and the airplane nosed over during the landing roll.

Following the accident, the fuel selector valve was found in the left tank position, and the left tank was about one-quarter full. Although enough fuel remained in the left tank to power the engine, it had most likely migrated from the right to left tank via the tank vent crossover line, as the airplane lay inverted for several days after the accident. The fuel capacity of the left tank was about equal to that which would have been used during the flight.

Postaccident examination did not reveal any anomalies with the airframe or engine that would have precluded normal operation. The engine was tested while attached to the airframe and fuel supply system, and ran uneventfully at various power settings. Thus, the partial, then total, loss of power is consistent with a fuel starvation event.

The student stated that he always operated the airplane with the fuel selector valve in the "both" position and that, on the day of the accident, he only checked it once during the preflight inspection before the first takeoff. If the student had verified the fuel selector position before takeoff on the accident leg, as required in the engine start and before takeoff checklists, or switched tanks when the engine began to run rough, the total loss of engine power would not have occurred.

Probable Cause and Findings

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

The student pilot's fuel mismanagement, which led to fuel starvation and a total loss of engine power during cruise flight. Contributing to the accident was his failure to follow the appropriate engine start, before takeoff, and emergency checklists.

Findings

Aircraft	Fuel - Fluid management (Cause)
Personnel issues	Understanding/comprehension - Student pilot (Cause)
	Decision making/judgment - Student pilot (Cause)
	Use of equip/system - Student pilot (Cause)

Factual Information

History of Flight

Enroute-cruise	Fuel starvation (Defining event)
Emergency descent	Off-field or emergency landing
Landing-landing roll	Nose over/nose down

On March 26, 2016, about 1315 Pacific daylight time, a Cessna 172L, N1151M, nosed-over during a forced landing in a field on McNeil Island, Washington, following a total loss of engine power. The airplane was registered to Raw Racing, Inc., and operated by Safety in Motion Flight Center under the provisions of 14 Code of Federal Regulations Part 91. The student pilot was not injured and the airplane sustained substantial damage. The solo cross-country instructional flight departed Bowerman Airport, Hoquiam, Washington, about 1250, with a planned destination of Tacoma Narrows Airport, Tacoma, Washington. Visual meteorological conditions prevailed, and a visual flight rules flight plan had been filed.

The pilot was gaining aeronautical experience for his private pilot rating, and was on the second-to-last leg of his first 150 nautical mile solo cross-country flight when the accident occurred.

Prior to departure from his home base of Pierce County Airport - Thun Field, Puyallup, he serviced the airplane with 6 gallons of fuel, and confirmed utilizing a dipstick that the tanks contained 36 gallons of fuel. He performed a preflight inspection, his flight plan was checked by a certified flight instructor at the flight school, and at 1030 he departed from Thun Field.

The route of flight took him north towards the Strait of Juan de Fuca at 3,000 ft mean sea level (msl). Due to low clouds, he was unable to land at his first intended destination of William R Fairchild International Airport, Port Angeles, so he continued west and landed at Sekiu Airport. After departing Sekiu he followed the coast south around the Olympic Peninsula, and landed at Bowerman. While enroute to Bowerman he noticed that the left fuel tank gauge was indicating almost empty, however he was not concerned, recalling that during flight training he had been taught that the fuel gauges could be unreliable.

He did not visually confirm the fuel tank quantity with a dipstick while at Bowerman, and after takeoff he followed waypoints inland. As he approached McNeil Island at about 2,000 ft msl, the engine began to sputter, and operate intermittently at reduced power. He confirmed the throttle control was full forward, and declared an emergency with the Tacoma Airport control tower. Concerned that performing troubleshooting steps could further exacerbate the situation, he did not follow any emergency checklists. For the next 5 minutes the engine continued to operate intermittently as the airplane gradually descended. Once over the Island, the engine lost all power. He guided the airplane toward a field for landing, and during the landing roll the airplane nosed over.

Student Pilot Information

Certificate:	Student	Age:	18, Male
Airplane Rating(s):	None	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 1 Without Waivers/Limitations	Last FAA Medical Exam:	03/09/2016
Occupational Pilot:	No	Last Flight Review or Equivalent:	03/26/2016
Flight Time:	66.7 hours (Total, all aircraft), 65.9 hours (Total, this make and model), 16.5 hours (Pilot In Command, all aircraft), 12.9 hours (Last 90 days, all aircraft), 2.2 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	Registration:	N1151M
Model/Series:	172L	Aircraft Category:	Airplane
Year of Manufacture:	1970	Amateur Built:	No
Airworthiness Certificate:	Normal; Utility	Serial Number:	17259451
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	03/11/2016, Annual	Certified Max Gross Wt.:	2300 lbs
Time Since Last Inspection:	11 Hours	Engines:	1 Reciprocating
Airframe Total Time:	9500 Hours as of last inspection	Engine Manufacturer:	LYCOMING
ELT:	Installed, not activated	Engine Model/Series:	O-320 SERIES
Registered Owner:	RAW RACING INC	Rated Power:	160 hp
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KTIW, 315 ft msl	Distance from Accident Site:	7 Nautical Miles
Observation Time:	1953 UTC	Direction from Accident Site:	50°
Lowest Cloud Condition:	Few / 6000 ft agl	Visibility	10 Miles
Lowest Ceiling:	Overcast / 8000 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	3 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	110°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.02 inches Hg	Temperature/Dew Point:	11° C / 3° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	HOQUIAM, WA (HQM)	Type of Flight Plan Filed:	VFR
Destination:	TACOMA, WA (TIW)	Type of Clearance:	None
Departure Time:	1250 PDT	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	47.197500, -122.700556 (est)

Tests And Research

The airplane was equipped with two rigid metal fuel tanks installed on the inboard of each wing. Total fuel capacity was 38 usable gallons, and fuel flowed by gravity to a four position selector. Tank ventilation was accomplished by a check valve-equipped overboard vent line in the left tank, and a crossover line on the inboard top sides of both tanks which connected their air spaces. Fuel quantity transmitters were installed on the top of both tanks. The fuel selector positions were "OFF", "BOTH", "LEFT", and "RIGHT", and according to the Cessna 172L Owner's Manual, both the before start and before takeoff checklists required that the both position be selected.

Following the accident, the airplane remained upside-down in the field, and was recovered four days later. During recovery, 12 gallons of fuel was removed from the right tank, and 5 gallons from the left. At that time, the fuel selector switch was found in the left tank position. Both the pilot and first response personnel from the local Fire Department stated that they did not change the position of the fuel selector after the accident.

The pilot reported that he always flew with both tanks selected, in compliance with the flight school's policy, and that he confirmed this position was selected prior to departing from Thun Field, but not at any other time during the remaining flights.

The total distance flown since departure from Thun Field was about 295 miles. According to the Owner's Manual, at an altitude of 2,500 ft, a weight of 2,300 lbs., and engine speed of 2,500 rpm, the airplane will cruise at 128 mph true airspeed, and burn 7.8 gallons of fuel per hour.

The airplane was examined by an FAA Inspector following recovery. All fuel and vent lines were clear, and no mechanical anomalies were noted. The engine was then operated utilizing fuel fed to each wing root supply line (the wings were removed during recovery). The engine ran uneventfully at various speeds for about 7 minutes with both the left and right tank positions selected.

Administrative Information

Investigator In Charge (IIC):	Elliott Simpson	Report Date:	12/12/2016
Additional Participating Persons:	Donald Bacon; Federal Aviation Administration FSDO; Renton, WA		
Publish Date:	12/12/2016		
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=92920		

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](#).