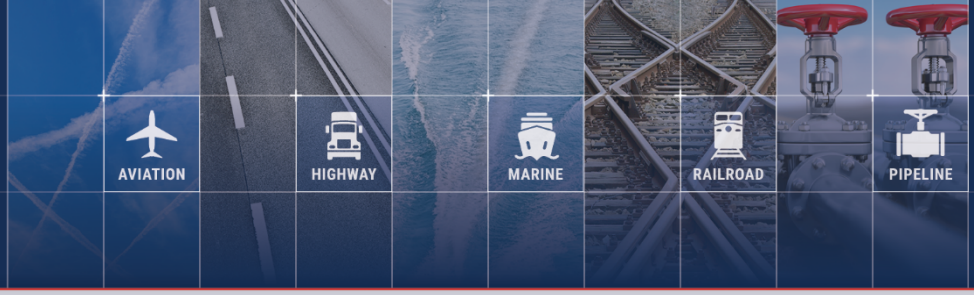

Aviation Investigation Final Report

Location:	Cincinnati, Ohio	**Accident Number:**	CEN15LA303
Date & Time:	July 5, 2015, 17:40 Local	**Registration:**	N354BM
Aircraft:	AVIAT AIRCRAFT INC A-1C-180	**Aircraft Damage:**	Substantial
Defining Event:	Fuel exhaustion	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot was conducting a personal flight. After practicing stop-and-go landings, he departed, turned the airplane to the left, climbed to 1,800 ft mean sea level, reduced power to 40% to 45%, and activated the lean-of-peak assist feature on the engine instrumentation. As he leaned the mixture and watched for the first cylinder to reach peak exhaust gas temperature, a fuel flow sensor malfunction indicator light appeared on the engine instrumentation. The pilot subsequently enriched the mixture, but the sensor malfunction indication continued, and the engine lost power. After attempting to restart the engine, the pilot conducted a forced landing to a golf course. During the landing roll, the right wing tip and right elevator struck a tree, which resulted in structural damage. Examination of the engine, airframe, and fuel system did not reveal any preimpact mechanical malfunctions or failures that would have precluded normal operation. The fuel tanks were not damaged, and there was no evidence of fuel leakage at the accident site. However, only about 2 gallons of fuel were found remaining in the airplane. The 2 gallons were unusable. The engine instrumentation system was powered up, and the "fuel remaining" indicated 17.6 gallons. Per the system pilot's guide, the pilot is required to perform a "first time set up" that includes calibrating the fuel flow transducer. This calibration has a direct input into how the system computes the airplane's remaining fuel. This task was never accomplished, which provided the pilot with an erroneous "fuel remaining" indication. The pilot reported that he did not physically check the wing tank fuel quantity tubes that were in the cockpit or "dip" the fuel tanks to verify fuel quantity. Thus, it is likely that the engine lost power due to fuel exhaustion.

Probable Cause and Findings

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

The pilot's inadequate preflight inspection and fuel planning, which resulted in a loss of engine power due to fuel exhaustion.

Findings

Aircraft	Fuel - Fluid management
Personnel issues	Fuel planning - Pilot
Aircraft	Fuel - Fluid level
Environmental issues	Tree(s) - Contributed to outcome

Factual Information

History of Flight

Prior to flight	Aircraft inspection event
Maneuvering	Fuel exhaustion (Defining event)
Maneuvering	Attempted remediation/recovery
Emergency descent	Off-field or emergency landing
Emergency descent	Collision with terr/obj (non-CFIT)

****This report was modified on February 20, 2020. Please see the docket for this accident to view the original report.****

On July 5, 2015, about 1740 eastern daylight time, an Aviat Aircraft Inc., A1C-180 Husky airplane, N354BM, was substantially damaged during a forced landing following a loss of engine power near Cincinnati, Ohio. The private pilot was not injured. The airplane was registered to and operated by the pilot under the provisions of Title 14 *Code of Federal Regulations* Part 91 as a personal flight. Visual meteorological conditions prevailed and a flight plan was not filed. The flight originated from the Clermont County Airport (I69), Batavia, Ohio, at 1730, and its destination was the Cincinnati Municipal Airport (LUK), Cincinnati, Ohio.

The pilot reported that after practicing stop and go short field landings at I69, the pilot departed for LUK. After departure, the pilot turned the airplane to the left, climbed to 1,800 ft mean sea level (about 950 ft above ground level), reduced power to 40% to 45% for slow flight, and activated the Lean-of-Peak assist feature of the JPI EDM930 Engine Instrument. As he leaned the mixture and watched for the first cylinder to reach peak exhaust gas temperature, a Fuel Flow Sensor malfunction indicator light appeared on the EDM930. The pilot subsequently enriched the mixture, but the sensor malfunction indication continued, and the engine lost power. After attempting engine restart procedures and applying carburetor heat, the engine did not respond, so the pilot set up for a forced landing to a golf course. During the landing roll, the right wing tip and right elevator struck a tree resulting in structural damage. The airplane came to rest upright and the pilot evacuated uninjured.

According to a Federal Aviation Administration inspector, examination of the engine and airframe at the accident site did not reveal any mechanical or fuel delivery problems. All engine controls were functioning properly and oil quantity was normal. Additionally, the fuel tanks were not damaged and there was no indication of fuel leaking at the accident site. The aircraft was equipped with two 26-gallon (25 usable) fuel tanks, one in each wing. According to the pilot, the aircraft burned about 10 gallons per hour and the last amount of fuel put on the aircraft was 13.4 gallons, the day before the accident. The aircraft accumulated about 3.1 hours of flight time since the refueling.

At the accident site, the JPI EDM930 system was powered up and the "fuel remaining" indicated 17.6 gallons. Per the EDM 930 pilot's guide, the pilot is required to perform a "first time set up" which

includes calibrating the fuel flow transducer. This calibration has a direct input into how the EDM computes the aircraft's remaining fuel. This task was never accomplished, which provided the pilot with an erroneous "fuel remaining" indication. After the fuel was drained from the left wing, approximately 2 gallons were recovered from the tanks. The pilot reported that he did not physically check the wing tank fuel quantity tubes that were in the cockpit, or "dip" the fuel tanks to verify fuel quantity. Also, the pilot stated that he was "preoccupied" with trying to obtain the "rich to peak" fuel burn on the EDM930 while the engine began to lose power, and he may not have noticed the engine was losing power until it actually quit.

Pilot Information

Certificate:	Private	**Age:**	58
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	5-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	May 14, 2013
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	July 13, 2013
Flight Time:	1015.5 hours (Total, all aircraft), 517.5 hours (Total, this make and model), 907.5 hours (Pilot In Command, all aircraft), 18.6 hours (Last 90 days, all aircraft), 7.5 hours (Last 30 days, all aircraft), 3.5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	AVIAT AIRCRAFT INC	**Registration:**	N354BM
Model/Series:	A-1C-180 UNDESIGNAT	**Aircraft Category:**	Airplane
Year of Manufacture:	2011	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	3132
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	June 6, 2014 Annual	**Certified Max Gross Wt.:**	2200 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	561 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	C91 installed, not activated	**Engine Model/Series:**	O-360-A1P
Registered Owner:	On file	**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:	I69,843 ft msl	**Distance from Accident Site:**	4 Nautical Miles
Observation Time:	17:30 Local	**Direction from Accident Site:**	235°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 12000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.07 inches Hg	**Temperature/Dew Point:**	24°C / 18°C
Precipitation and Obscuration:			
Departure Point:	Clermont, OH (I69)	**Type of Flight Plan Filed:**	None
Destination:	Cincinnati, OH (LUK)	**Type of Clearance:**	None
Departure Time:	17:30 Local	**Type of Airspace:**	Class G

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:**	39.031944,-84.272499

Administrative Information

Investigator In Charge (IIC):	Lemishko, Alexander
Additional Participating Persons:	Michael Bloom; FAA FSDO; Cincinnati, OH
Original Publish Date:	April 13, 2020
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=91539