Aviation Investigation Final Report

Location:	North Vernon, Indiana	**Accident Number:**	CEN21LA194
Date & Time:	April 16, 2021, 20:30 Local	**Registration:**	N19D
Aircraft:	Cessna A185F	**Aircraft Damage:**	Substantial
Defining Event:	Fuel starvation	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

After a 100-hour inspection, which the pilot assisted with, he conducted an operational check of the airplane, which included a run-up of the airplane. The mechanic had to leave before the inspection was complete, and the pilot installed portions of the interior which included the fuel selector handle. He then departed the airport and after retracting the landing gear and flaps, the engine lost power. During the forced landing the airplane sustained substantial damage to the empennage and aft section of the fuselage.

Examination of the airplane revealed that fuel was available in the left and right fuel tanks. The examination also found that the fuel selector handle had been installed incorrectly by 90° on the fuel selector shaft. The position of the shaft as found would have restricted all fuel flow from the left and right fuel tanks. The shaft was “keyed” such that the fuel selector handle should only be installed one way; however, the handle partially fit over the stem when not aligned with the key on the shaft and allowed the attaching screw to partially engage on the stem.

An engine test run was conducted; the engine started normally and with the engine at full throttle, the fuel selector was placed in the left, right, and both positions. The engine continued to run with no anomalies noted.

The airplane was factory equipped with a small header tank that fuel accumulated in before being fed to the engine.

The accident is consistent with the fuel selector shaft being in the off position while the selector handle pointed to the left fuel tank. Once the fuel in the airplane’s header tank was exhausted, the engine lost 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 improper installation of the fuel selector handle, which resulted in a total loss of engine power due to fuel starvation.

Findings

Personnel issues	Scheduled/routine maintenance - Pilot
Aircraft	Fuel - Incorrect service/maintenance

Factual Information

History of Flight

Initial climb	Loss of engine power (total)
Prior to flight	Aircraft maintenance event
Landing	Off-field or emergency landing
Initial climb	Fuel starvation (Defining event)

On April 16, 2021, about 2030 eastern daylight time, a Cessna A185F amphibian airplane, N19D, was substantially damaged when it was involved in an accident near North Vernon, Indiana. The pilot was not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that he assisted a mechanic with a 100-hour inspection, and he then conducted an operational check of the airplane, which included an inspection and a run-up of the airplane. He then departed and after retracting the landing gear and flaps, the engine lost power. Unable to make it back to the airport, he selected a nearby golf course for the forced landing. The airplane sustained substantial damage to the empennage and aft section of the fuselage.

Examination of the airplane by a Federal Aviation Administration (FAA) inspector revealed that the left fuel tank contained 10 gallons of fuel and the right fuel tank contained 15 gallons of fuel. The inspector reported that the mechanic had to leave work early, and the pilot installed portions of the interior which included the fuel selector handle. Examination of the fuel selector handle found that the handle had been installed incorrectly by 90° on the fuel selector shaft. The fuel selector shaft was "keyed" so that the fuel selector handle could be installed in only one way; however, the handle partially fit over the stem and allowed the attaching screw to partially engage on the shaft. The inspector removed the fuel selector handle and provided a photo of the selector as orientated, when found (see Figure 1). The fuel selector handle was on the left tank position, but the orientation of the fuel selector shaft as positioned restricted all fuel flow to the engine.

Figure 1: Fuel valve selector (FAA photo)

A post-accident engine test run was conducted with the engine operated at full throttle; the fuel selector was placed in the left, right, and both positions. The engine operated with the fuel selector in each of these positions with no anomalies noted.

The airplane was factory equipped with a small header tank that collected fuel before being fed to the engine.

Pilot Information

Certificate:	Commercial	**Age:**	49
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	4-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine; Helicopter	**Toxicology Performed:**	
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	March 2, 2021
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	January 13, 2021
Flight Time:	1107 hours (Total, all aircraft), 384 hours (Total, this make and model), 992 hours (Pilot In Command, all aircraft), 72 hours (Last 90 days, all aircraft), 35 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N19D
Model/Series:	A185F	**Aircraft Category:**	Airplane
Year of Manufacture:	1980	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	18504097
Landing Gear Type:	Retractable - ; Amphibian	**Seats:**	6
Date/Type of Last Inspection:	April 16, 2021 100 hour	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	12825 Hrs	**Engine Manufacturer:**	Continental
ELT:	Installed	**Engine Model/Series:**	IO-550D
Registered Owner:	ECHELON RIGHT LLC	**Rated Power:**	
Operator:	ECHELON RIGHT LLC	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Dusk
Observation Facility, Elevation:	KIMS	**Distance from Accident Site:**	18 Nautical Miles
Observation Time:	20:35 Local	**Direction from Accident Site:**	180°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.92 inches Hg	**Temperature/Dew Point:**	12°C / 4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	North Vernon, IN (OVO)	**Type of Flight Plan Filed:**	None
Destination:	North Vernon, IN (OVO)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	39.054943,-85.598748(est)

Administrative Information

Investigator In Charge (IIC):	Hatch, Craig
Additional Participating Persons:	Steve Stombaugh ; FAA FSDO
Original Publish Date:	July 20, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=102937