Aviation Investigation Final Report

Location:	Jerome, Idaho	**Accident Number:**	WPR20LA096
Date & Time:	February 26, 2020, 16:45 Local	**Registration:**	N1XF
Aircraft:	Lightning Avion Eab LLC Arion Lightning	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that he recently purchased the airplane and experienced inaccurate right fuel gauge readings, so he used a fuel totalizer on the airplane's instrumentation and conducted frequent fuel calculations. About 24 miles from his destination, he intentionally ran the right fuel tank empty and the engine sputtered and quit. He turned off the right fuel tank selector and turned on the left fuel tank selector. The engine started again for several seconds then it sputtered again. He adjusted the fuel selectors several times, but to no avail. Unable to make the airport, he initiated an off-field landing. As the airplane descended, the pilot observed several obstacles. As he made a left turn to avoid them, the left wing stalled, and the airplane impacted the ground nose down. The aft fuselage and wings sustained substantial damage. As the pilot exited the airplane, he noted two streams of fuel exiting the damaged left wingtip. During recovery, limited to no fuel was removed from the airplane, and the smell of fuel was not noted at the accident site. There was nothing abnormal noted with the fuel system as the airplane was disassembled and prepared for transport.

During the emergency descent following a loss of engine power due to fuel starvation, the pilot was maneuvering the airplane in a left-wing low attitude, when it stalled and subsequently collided with the ground left wing first. The loss of engine power and the subsequent forced landing likely could have been prevented had the pilot switched fuel tanks prior to depleting the right fuel tank of fuel.

Probable Cause and Findings

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

The pilot’s mismanagement of fuel, which resulted in fuel starvation and the pilot’s loss of airplane control during an emergency descent, which resulted in a stall and subsequent impact with terrain.

Findings

Aircraft	Fuel - Fluid management
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Enroute	Fuel starvation
Emergency descent	Loss of control in flight (Defining event)
Emergency descent	Aerodynamic stall/spin

On February 26, 2020, about 1645 mountain standard time, an Arion Lightning airplane, N1XF, was substantially damaged when it was involved in an accident near Jerome, Idaho. The pilot sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations (CFR)* Part 91 personal flight.

The pilot reported that he recently purchased the airplane, during the pre-purchasing inspection the right fuel gauge was inaccurate and unreliable. After maintenance fixed the problem twice, they informed the pilot that he must recalibrate the gauge upon his return home. To make the long flight home, he used a fuel totalizer on the airplane's instrumentation and conducted frequent fuel calculations. About 25 nautical miles from his intended destination, he calculated 6.3 gallons remaining (4.3 usable) for about 38-40 minutes of flight. Shortly thereafter, the engine sputtered and quit. He turned off the right fuel tank selector and turned on the left fuel tank fuel. In addition, he reduced the airspeed to 75 knots, turned off autopilot, and redirected to a closer airport. The engine ran again for several seconds before it sputtered again. He adjusted the fuel selectors several times, but to no avail. Unable to make it to the airport, the pilot elected to land on a nearby roadway. However, as the airplane descended, he observed fences on both sides of the road and made a left turn to a nearby field. As he turned, the left wing stalled, and the airplane impacted the ground left wing first. The aft fuselage and wings sustained substantial damage. As the pilot exited the airplane, he noted two streams of fuel exiting the damaged left wingtip.

The pilot reported to the Federal Aviation Administration that he intentionally ran the right fuel tank empty in flight because of the inoperative right fuel gauge. The pilot switched to the left fuel tank, which had about 4 gallons of fuel remaining; however, the engine would not regain power.

During recovery, little to no fuel was removed from the airplane, and the smell of fuel was not noted at the accident site. There was nothing abnormal noted with the fuel system as the airplane was disassembled and prepared for transport.

Pilot Information

Certificate:	Private	**Age:**	61,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	August 8, 2019
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 25, 2019
Flight Time:	550 hours (Total, all aircraft), 13 hours (Total, this make and model), 503 hours (Pilot In Command, all aircraft), 25 hours (Last 90 days, all aircraft), 18 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Lightning Avion Eab LLC	**Registration:**	N1XF
Model/Series:	Arion Lightning	**Aircraft Category:**	Airplane
Year of Manufacture:	2012	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	114
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	February 2, 2020 Condition	**Certified Max Gross Wt.:**	1525 lbs
Time Since Last Inspection:	16 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	117 Hrs as of last inspection	**Engine Manufacturer:**	Jabriu
ELT:	C126 installed, activated, did not aid in locating accident	**Engine Model/Series:**	3300 Gen 4
Registered Owner:	On file	**Rated Power:**	120 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:	JER,4053 ft msl	**Distance from Accident Site:**	4 Nautical Miles
Observation Time:	16:53 Local	**Direction from Accident Site:**	240°
Lowest Cloud Condition:	Scattered / 7000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 12000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	320°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.34 inches Hg	**Temperature/Dew Point:**	9°C / -8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Worland, WY (WRL)	**Type of Flight Plan Filed:**	None
Destination:	Gooding, ID (GNG)	**Type of Clearance:**	None
Departure Time:	13:15 Local	**Type of Airspace:**	Unknown

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	42.759723,-114.37166(est)

Administrative Information

Investigator In Charge (IIC):	Link, Samantha
Additional Participating Persons:	Patrick Darling; Federal Aviation Administration; Boise, ID
Original Publish Date:	March 16, 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=101010