Aviation Investigation Final Report

Location:	Warthen, Georgia	**Accident Number:**	ERA18TA250
Date & Time:	September 14, 2018, 10:20 Local	**Registration:**	N9218L
Aircraft:	American Aviation AA1	**Aircraft Damage:**	Substantial
Defining Event:	Fuel exhaustion	**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The commercial pilot reported that, on the day of the accident, he filled each tank of the newly purchased airplane with 12.5 gallons of fuel. On his first flight, after about 20 minutes of flying, he noticed he was running out of fuel. The pilot thought the fuel burn was very high and decided to land at the nearest airport; he added about 24 gallons of fuel. After departure and about 30 minutes of flying, he again noticed that the airplane was running out of fuel. He planned to land at the nearest airport; however, about 15 miles away from the airport, the engine lost total power. The pilot switched fuel tanks and turned on the electric boost pump, and the engine restarted. A few minutes later, the engine lost total power again. The pilot noticed both fuel tanks were out of fuel. During a forced landing in a field, the airframe was substantially damaged.

Postaccident examination of the engine revealed that the carburetor float bowl plug was missing, which allowed fuel to leak out of the carburetor. Thus, the airplane's fuel consumption during the flight would have increased substantially and likely resulted in exhaustion of the airplane's available fuel supply at a greater-than-normal rate. Although the pilot reported that the airplane was recently inspected before he purchased it, no maintenance records were available for review, so the scope of work done to, or inspections of, the carburetor could not be determined. Further, the pilot's decision to depart on the accident flight leg after noting excessive fuel consumption on the previous leg contributed to the accident.

Probable Cause and Findings

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

A fuel leak from the carburetor float bowl due to a missing plug, which resulted in excessive fuel consumption and a total loss of engine power due to fuel exhaustion. Contributing to the accident was the pilot's decision to depart on the accident flight leg after noting the airplane's unexpectedly high fuel consumption during the previous leg.

Findings

Aircraft	Fuel control/carburetor - Inadequate inspection
Aircraft	Fuel - Fluid level
Personnel issues	Decision making/judgment - Pilot

Factual Information

History of Flight

Prior to flight	Aircraft maintenance event
Enroute-cruise	Fuel exhaustion (Defining event)
Enroute-cruise	Loss of engine power (total)
Emergency descent	Off-field or emergency landing

On September 14, 2018, about 1020 eastern daylight time, an American Aviation AA-1A, N9218L, was substantially damaged after it impacted terrain during a forced landing in Warthen, Georgia. The commercial pilot and passenger sustained minor injuries. Visual meteorological conditions prevailed, and no flight plan was filed for the flight that originated from the Oconee County Regional Airport (CEU), Clemson, South Carolina, and was destined for Summerfield, Florida. The personal flight was conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91.

The pilot reported that earlier during the day of the accident, he purchased the airplane in Morristown, Tennessee. He filled up each of the two fuel tanks with 12.5 gallons of fuel and departed from Moore-Murrell Airport (MOR), Morristown, Tennessee around 0730 destined for Summerfield, Florida. While flying at a cruise altitude of 9,500 ft. mean sea level, about 20 minutes after takeoff, he noticed the fuel level was down to a one-fourth tank of fuel in each fuel tank. The pilot thought the fuel burn was very high and decided to land at the closest airport, which was CEU. He filled up again with 24 gallons of fuel and departed about 0950. About 30 minutes into the flight he noticed that the fuel level was at one-fourth tank in each wing fuel tank again. The pilot further stated that he decided to divert to the nearest airport, which was OKZ. About 15 miles away from the airport, the engine lost all power, he switched fuel tanks to the right fuel tank, activated the electric boost pump and the engine restarted. A few minutes later the engine lost all power again and he noticed both fuel tanks were empty. The pilot located a field and configured the airplane for landing. During the rollout in the field, the nose landing gear contacted some soft dirt and collapsed. The airplane slid 90° to the left and came to rest upright. Both occupants egressed through the canopy.

Examination of the wreckage revealed that the left-wing tip was crushed, and the main spar was damaged, and the nose landing gear had collapsed. There was no fuel in either the left or right fuel tank. Two gallons of fuel was poured into the right fuel tank, and the electric fuel pump was turned on. Fuel began draining from the carburetor float bowl, and examination of the bowl revealed that its threaded plug was missing.

According to Federal Aviation Administration (FAA) records, the pilot held a commercial pilot certificate with ratings for airplane single-engine land, airplane multi-engine land, and instrument airplane. He held an FAA third-class medical certificate issued August 30, 2018. At the time of the medical examination, the pilot reported 700 total hours of flight experience.

The airplane was issued an airworthiness certificate on June 9, 1971. According to the FAA type certificate data sheet for the American Aviation AA-1A, the airplane was originally equipped with a

108-horsepower Lycoming O-235-C2C engine, driving a two-bladed McCauley 1A105 SCM 7157 propeller. The engine had been replaced with a 150-horsepower Lycoming O-320-E2 engine, driving a two-bladed Sensenich propeller. The airplane was also equipped with two 12-gallon fuel tanks, for a total fuel capacity of 24 gallons, of which 2 gallons were unusable.

The pilot reported that the airplane had recently undergone an annual inspection as well as a pre-purchase inspection; however, he was unable to locate the airplane's maintenance logbooks following the accident. The airplane's maintenance history, including any work done to, or inspections of the carburetor could not be determined.

Pilot Information

Certificate:	Commercial	**Age:**	68,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	August 30, 2018
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 532 hours (Total, all aircraft), 2 hours (Total, this make and model), 525.5 hours (Pilot In Command, all aircraft), 4.3 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	American Aviation	**Registration:**	N9218L
Model/Series:	AA1 A	**Aircraft Category:**	Airplane
Year of Manufacture:	1971	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	AA1A-0118
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	September 1, 2018 Annual	**Certified Max Gross Wt.:**	1560 lbs
Time Since Last Inspection:	2 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2093 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	O-320E2
Registered Owner:		**Rated Power:**	150 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:	KMLJ,384 ft msl	**Distance from Accident Site:**	25 Nautical Miles
Observation Time:	14:15 Local	**Direction from Accident Site:**	279°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	300°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.97 inches Hg	**Temperature/Dew Point:**	29°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Clemson, SC (CEU)	**Type of Flight Plan Filed:**	None
Destination:	Summerfield, FL	**Type of Clearance:**	None
Departure Time:	09:50 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Minor	**Latitude, Longitude:**	33.086387,-82.751113(est)

Administrative Information

Investigator In Charge (IIC):	Boggs, Daniel
Additional Participating Persons:	Steve Davidson; FAA/FSDO; Atlanta, GA
Original Publish Date:	November 19, 2019
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98299