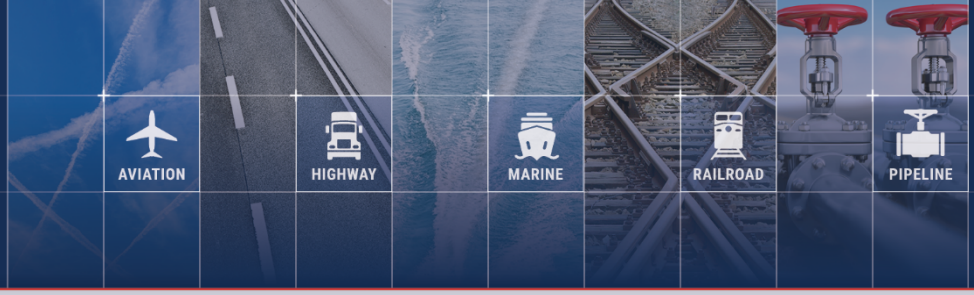

Aviation Investigation Final Report

Location:	Tunkhannock, Pennsylvania	**Accident Number:**	ERA10LA439
Date & Time:	August 20, 2010, 15:30 Local	**Registration:**	N4850A
Aircraft:	Piper PA-22-150	**Aircraft Damage:**	Substantial
Defining Event:	Fuel starvation	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The certified flight instructor (CFI) and private pilot departed on a local instructional flight with approximately 18 gallons of fuel on board. The CFI reported that the fuel valve had been selected to the right fuel tank for takeoff. On the fourth takeoff, when the airplane was about 50 feet above ground level, the engine lost all power. The CFI then switched the fuel selector valve to the left fuel tank and the engine restarted; however, the airplane impacted a tree, landed in the river, nosed over, and came to rest inverted. A postaccident examination of the airplane revealed that the left wing spar and lower portion of the firewall sustained substantial damage. Compression was confirmed on all engine cylinders, fuel was found in the carburetor, and the fuel screens were free of debris. According to the engine's manufacturer, up to 14 gallons per hour of fuel could be consumed at full power. The airplane's right fuel quantity gauge was placarded with "No take-off on right tank with less than 1/3 tank." It is likely that the right fuel tank was less than one-third full and on the initial climb the engine was starved of fuel.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A total loss of engine power during the initial climb due to the pilots' inadequate in-flight fuel management.

Findings

Aircraft	Fuel - Fluid management
Environmental issues	Water - Contributed to outcome
Personnel issues	Use of equip/system - Flight crew

Factual Information

History of Flight

Initial climb	Loss of engine power (total)
Initial climb	Fuel starvation (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)
Landing-flare/touchdown	Ditching
Landing-flare/touchdown	Nose over/nose down

On August 20, 2010, about 1530 eastern daylight time, a Piper PA-22-150, N4850A, registered to Alderdice Inc. and recently purchased by the private pilot, was substantially damaged when it collided with terrain immediately after departure from Skyhaven Airport (76N), Tunkhannock, Pennsylvania. Visual meteorological conditions prevailed and no flight plan was filed for the 14 Code of Federal Regulations Part 91 local instructional flight. The certificated flight instructor (CFI), and private pilot/owner receiving instruction, were uninjured.

According to the CFI, they had departed with approximately 18 gallons of fuel on board the airplane. On the fourth takeoff about 50 feet in the air, just pass the departure end of the runway, the engine quit. The fuel valve had been selected to the right fuel tank for takeoff, then after the engine quit, the pilot switched the fuel selector valve to the left fuel tank, and the engine restarted; however, the airplane impacted a tree, landed in a river, nosed over, and came to rest inverted.

According to a mechanic, the private pilot had purchased the airplane about one or two weeks prior to the accident. When he examined the airplane after the accident, there was no propeller damage other than a few scratches, the air box was damaged, and the left wing leading edge spar and associated ribs were damaged.

According to a Federal Aviation Administration inspector that examined the airplane after it was recovered from the river, the left wing spar was bent, the nose gear was damaged, the lower portion of the firewall was buckled, and the engine mounts were bent. Compression was confirmed on all engine cylinders using the thumb method, fuel was in the carburetor, and the fuel screens were free of debris. Flight control continuity was verified to all control surfaces from the control column. The pilots had also reported to him that the airplane had flown about two and one-half hours since it had been fueled.

The airplane was a four-place, high wing, with fixed tricycle landing gear. It comprised of a steel tube fuselage and an aluminum frame wing, covered with fabric. It also had two 18 gallon fuel tanks, one located in each wing and equipped with a Lycoming O-320-A2B 150 horsepower engine. According to the pilots the airplane had an annual inspection in October 2009.

The Piper PA-22 Type Certificate Data "NOTE 2" states in part "The following placards must be displayed…On right fuel quantity gauge…'No take-off on right tank with less than 1/3 tank.'" According to a phone interview with the CFI the placard was installed on the airplane.

The Lycoming Operators Manual for the O-320 series engine, section 3, "Operating Instructions" revealed that the fuel consumption could be as much as 14 gallons per hour.

Flight instructor Information

Certificate:	Commercial; Flight instructor	**Age:**	67,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	September 25, 2009
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 19350 hours (Total, all aircraft)		

Student pilot Information

Certificate:	Private	**Age:**	60,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	July 9, 2010
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 112 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N4850A
Model/Series:	PA-22-150	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	22-4003
Landing Gear Type:		**Seats:**	4
Date/Type of Last Inspection:	October 10, 2009 Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	LYCOMING
ELT:		**Engine Model/Series:**	O-320 SERIES
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:	AVP,962 ft msl	**Distance from Accident Site:**	15 Nautical Miles
Observation Time:	15:30 Local	**Direction from Accident Site:**	139°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots / 15 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	320°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.98 inches Hg	**Temperature/Dew Point:**	28°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Tunkhannock, PA (76N)	**Type of Flight Plan Filed:**	None
Destination:	Tunkhannock, PA (76N)	**Type of Clearance:**	None
Departure Time:	15:29 Local	**Type of Airspace:**	

Airport Information

Airport:	Skyhaven Airport 76N	**Runway Surface Type:**	Asphalt
Airport Elevation:	639 ft msl	**Runway Surface Condition:**	Water-calm
Runway Used:		**IFR Approach:**	Visual
Runway Length/Width:	2007 ft / 50 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	41.52639,-75.93972(est)

Administrative Information

Investigator In Charge (IIC):	Etcher, Shawn
Additional Participating Persons:	Rod Bourey; FAA/FSDO; Allentown, PA
Original Publish Date:	December 19, 2011
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=77056