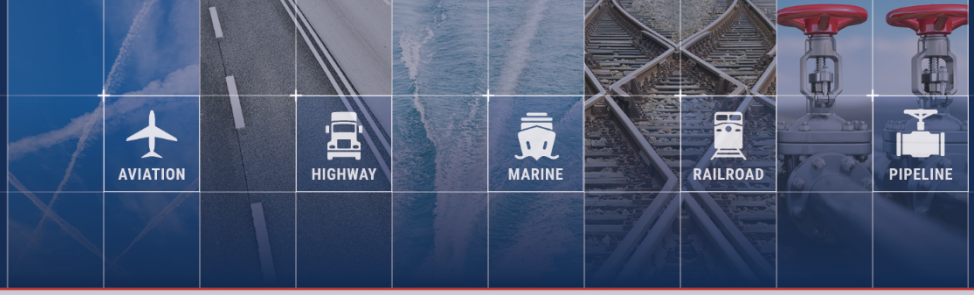

Aviation Investigation Final Report

Location:	Harrisburg, Pennsylvania	**Accident Number:**	ERA20LA011
Date & Time:	October 4, 2019, 17:13 Local	**Registration:**	N4385K
Aircraft:	Piper PA46	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that he was performing a visual approach for landing when the engine lost total power. Unable to restore engine power, the pilot performed a forced landing to a river.

After recovery, the external engine components were dried, cleaned, and reinstalled (magnetos, fuel manifold), and the starter was replaced due to water immersion. The engine was then placed in a test cell where it started immediately, accelerated smoothly, and ran continuously without interruption.

Radar and on-board data revealed that the airplane experienced lateral g-forces in the turn to final and during its approach in a gusting crosswind, consistent with a slip. Although the airplane's operating handbook cautioned against prolonged slips or skids or other "radical or extreme maneuvers which could cause uncovering of the fuel outlet," whether the slip during the accident flight was sufficient to uncover the fuel port and result in the loss of engine power could not be determined.

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 for reasons that could not be determined following a successful engine run.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Approach-IFR final approach	Loss of engine power (total) (Defining event)

On October 4, 2019, at 1713 eastern daylight time, a Piper PA46-310P, N4385K, was substantially damaged when it was involved in an accident near Harrisburg, Pennsylvania. The private pilot and a passenger sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

In a written statement, the pilot stated that he conducted a thorough preflight inspection and had the airplane serviced with 30 gallons of 100LL aviation gasoline. He estimated that the 122-gallon fuel system contained 77 gallons of fuel at the time of departure.

The pilot described the flight as "unremarkable." Upon arriving at the destination airport, he was cleared for a visual approach and stated that he referenced the localizer and glideslope indications for the instrument landing system (ILS) approach during the descent.

The pilot stated that he had lowered the landing gear and extended the flaps when the engine “cut out.” He switched fuel tanks and attempted to restart the engine, but was unsuccessful, and he subsequently retracted the landing gear and performed a forced landing to the Susquehanna River.

The airplane was submerged in the Susquehanna River until October 16, 2019, before it was recovered. Examination of the wreckage following recovery revealed that the airplane was intact, but the fuselage was deformed aft of the cabin door. Both wings were cut at their roots by recovery personnel. Before removal of the wings, each wing was drained of fuel and water. The left wing contained 12.5 gallons of fuel and 10 gallons of water. The right wing contained 17 gallons of fuel and 15 gallons of water.

Flight control continuity was confirmed from the flight controls to all flight control surfaces. Fuel system continuity was confirmed from the roots of each wing to the fuel metering unit. Electrical power was applied to the fuel boost pumps in each wing, and both operated when energized.

The engine spark plugs were removed from the top of each cylinder. Each spark plug displayed normal wear and evidence of exposure to water. The engine was rotated by hand at the propeller; both magneto impulse couplings "snapped," and spark was produced at the ignition leads of the top six spark plugs.

The engine examination was suspended, and the engine was removed for examination at the

manufacturer's facility. Prior to placement in the test cell, some engine components required repair or replacement due to water submersion, damage, or contamination. The engine starting motor was replaced when rotation of the propeller revealed "binding." Ignition timing was confirmed on the left and right magneto prior to removal for drying. Once dried, they were reinstalled and timed to their as-found timing values.

Once placed in the test cell, an engine start was attempted without success. Investigation revealed that the fuel manifold was contaminated and blocked due to water submersion. The manifold was removed, disassembled, cleaned, reassembled, and reinstalled.

An engine start was attempted, and the engine started immediately, accelerated smoothly, and ran continuously at all power settings without interruption. The examination and test run revealed no pre-impact anomalies that would have prevented the engine's ability to produce rated horsepower.

Examination of the airplane's flight track and data downloaded from its engine data monitor revealed the airplane experienced an increase in lateral g-forces as it aligned with the final approach (localizer) course. The airplane continued its approach left of the localizer course in a right-wing down or slip configuration, consistent with compensation for the gusting wind from its right side.

According to the pilot's operating handbook for the airplane:

Prolonged slips or skids which result in excess of 2000 feet of altitude loss or other radical or extreme maneuvers which could cause uncovering of the fuel outlet must be avoided as fuel flow interruption may occur when the tank being used is not full.

Pilot Information

Certificate:	Private	**Age:**	66,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
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:**	June 10, 2019
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1502 hours (Total, all aircraft), 433 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N4385K
Model/Series:	PA46 310P	**Aircraft Category:**	Airplane
Year of Manufacture:	1984	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	46-8508027
Landing Gear Type:	Retractable - Tricycle	**Seats:**	
Date/Type of Last Inspection:	March 1, 2019 Annual	**Certified Max Gross Wt.:**	4101 lbs
Time Since Last Inspection:	20 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	5105 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO 550C
Registered Owner:	On file	**Rated Power:**	310 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:	KMDT,312 ft msl	**Distance from Accident Site:**	2 Nautical Miles
Observation Time:	20:56 Local	**Direction from Accident Site:**	300°
Lowest Cloud Condition:	Few / 5000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots / 22 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	10°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.2 inches Hg	**Temperature/Dew Point:**	17°C / 6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Rochester, NY (ROC)	**Type of Flight Plan Filed:**	IFR
Destination:	Harrisburg, PA (MDT)	**Type of Clearance:**	IFR
Departure Time:	16:00 Local	**Type of Airspace:**	

Airport Information

Airport:	HARRISBURG INTL MDT	**Runway Surface Type:**	Asphalt
Airport Elevation:	309 ft msl	**Runway Surface Condition:**	Water-calm
Runway Used:	31	**IFR Approach:**	None
Runway Length/Width:	10001 ft / 200 ft	**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 Minor	**Latitude, Longitude:**	40.176109,-76.726943(est)

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian
Additional Participating Persons:	Vincent A Yerace; FAA/FSDO; Harrisburg, PA Mike Council; Continental Motors; Mobile, AL
Original Publish Date:	June 28, 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=100432