Aviation Investigation Final Report

Location:	Aberdeen, Idaho	**Accident Number:**	WPR19FA042
Date & Time:	December 17, 2018, 07:55 Local	**Registration:**	N6283P
Aircraft:	Piper PA-24-250	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Security camera video captured the airplane during the initial climb after takeoff. The video showed that as the airplane entered the view of the camera, it appeared to be in a shallow climb; however, about 14 seconds later, the airplane descended in a near vertical manner, out of view of the camera. The airplane impacted open terrain about 1,850 ft west of the departure end of the runway. Examination of the airframe revealed no mechanical anomalies that would have precluded normal operation; however, the left fuel selector valve was in the left wingtip tank position, and the right selector valve was in in a position between the right main fuel tank and right wingtip tank position. The Airplane Flight Manual Supplement for the wingtip fuel tank installation stated that the wingtip tank fuel was to be used in level flight only. It is likely that because of the placement of the fuel port in the wingtip fuel tanks, when the airplane was in a climb attitude, the fuel may not have reached the fuel port in the tank. As a result, the pilot's improper positioning of the fuel valves could have led to fuel starvation during the takeoff climb and resulted in a loss of engine power.

Additionally, examination of the engine revealed that both magnetos were found in poor condition and showed evidence of little maintenance being performed. The left magneto drive shaft would not rotate. Disassembly of the left magneto revealed excessive wear on the bearing race that is attached to the drive shaft. The excessive wear allowed the magnets to contact the magneto housing, which resulted in the magneto being grounded, thus inoperative. The inoperative magneto would have partially reduced engine power.

It is likely that the pilot experienced a loss of engine power to some degree during takeoff initial climb and his attention could have been diverted as part of troubleshooting the loss of engine power. The pilot's diverted attention most likely allowed for the airplane to exceed its critical angle of attack, resulting in a stall and subsequent spin at an altitude too low for recovery.

Probable Cause and Findings

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

The pilot's diverted attention during the takeoff climb due to a loss of engine power, which resulted in the airplane’s exceedance of the critical angle of attack and subsequent stall/spin.

Findings

Personnel issues	Aircraft control - Pilot
Personnel issues	Attention - Pilot
Aircraft	Magneto/distributor - Failure
Aircraft	Fuel selector/shutoff valve - Incorrect use/operation
Aircraft	Angle of attack - Not attained/maintained

Factual Information

History of Flight

Initial climb	Loss of engine power (partial)
Initial climb	Loss of control in flight (Defining event)
Initial climb	Collision with terr/obj (non-CFIT)

On December 17, 2018, about 0755 mountain standard time, a Piper PA-24-250 airplane, N6283P, was substantially damaged when it was involved in an accident near Aberdeen, Idaho. The pilot sustained fatal injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

Review of airport security camera video recordings revealed that the accident airplane departed from runway 25 at Aberdeen Municipal Airport (U36), Aberdeen, Idaho, and entered a shallow climb, remaining on a westerly heading. About 14 seconds after the airplane entered the camera's field of view, it descended in a near vertical manner, out of view of the camera. The wreckage was located about 1 hour after the accident by a nearby resident. There were no known witnesses to the accident.

Pilot Information

Certificate:	Private	**Age:**	42,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	December 30, 2016
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	February 26, 2018
Flight Time:	292.2 hours (Total, all aircraft), 172.6 hours (Total, this make and model), 243.3 hours (Pilot In Command, all aircraft), 48.7 hours (Last 90 days, all aircraft), 4.6 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N6283P
Model/Series:	PA-24-250	**Aircraft Category:**	Airplane
Year of Manufacture:	1959	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	24-1393
Landing Gear Type:	Retractable - Tricycle	**Seats:**	
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	2899 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:	C91 installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-540-A1G5
Registered Owner:		**Rated Power:**	250 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

No maintenance records were located during the investigation. Federal Aviation Administration (FAA) Airworthiness records showed that the airplane was equipped with Brittain Mark II auxiliary fuel wingtip tanks in 1960. The Airplane Flight Manual Supplement for the wingtip fuel tank installation stated in part, "auxiliary wing tip tank fuel to be used in level flight only." A placard showing the limitation for the auxiliary wingtip fuel tanks was observed near the fuel selector valve handles.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KPIH,4478 ft msl	**Distance from Accident Site:**	14 Nautical Miles
Observation Time:	14:53 Local	**Direction from Accident Site:**	90°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	50°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.26 inches Hg	**Temperature/Dew Point:**	-10°C / -12°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Aberdeen, ID (U36)	**Type of Flight Plan Filed:**	None
Destination:	Vernal, UT	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Narrative meteorological information place holder

Airport Information

Airport:	ABERDEEN MUNI U36	**Runway Surface Type:**	Asphalt
Airport Elevation:	4473 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	25	**IFR Approach:**	None
Runway Length/Width:	3690 ft / 50 ft	**VFR Approach/Landing:**	None

Narrative airport information place holder

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	42.920276,-112.894721

The airplane impacted open terrain about 1,850 ft west of the departure end of runway 25. The airplane came to rest upright on a heading of about 279° magnetic, at an altitude of 4,156 ft mean sea level. A ground impression consistent with the right-wing tip fuel tank was observed adjacent to the right-wing tip fuel tank. In addition, an area of compressed dirt was observed to the right of the fuselage/cowling area. All major structural components were located at the accident site. A scent of fuel was present at the accident site.

The fuselage was mostly intact. The engine, cowling, and forward portion were slightly displaced to the right. The fuselage structure aft of the cabin area was buckled and displaced upward and to the right. The vertical stabilizer, rudder, stabilator, and stabilator trim tab remained attached and secure to their respective mounts. The stabilator trim actuator appeared to be in a position near neutral.

The fuel selector valves were found intact. The left fuel selector valve was in the left tip fuel tank position, and the right selector valve was in in a position between the right main fuel tank and right tip fuel tank position. All internal passages of both fuel selector valves were found to be free of obstructions.

The right wing remained attached to the fuselage. The bottom side of the wing was compressed upward throughout its span. Multiple tears in the leading edge along with bending and buckling throughout was observed. The right-wing tip fuel tank remained attached and exhibited an approximate 45° crush angle extending from the bottom of the tip tank to the top. Both the right main fuel tank and right wingtip fuel tank were breached.

The left wing remained attached to the fuselage. The bottom side of the wing exhibited upward crushing throughout its span. The left wingtip fuel tank remained attached. Both the left main fuel tank and left wingtip fuel tank were breached.

Flight control continuity was established from all primary flight control surfaces to the cockpit controls. No separations in the control cables were observed.

The engine remained attached to the fuselage via its mounts. The carburetor, left and right magnetos, fuel pump, vacuum pump, oil filter, and starter were separated. The engine crankshaft was rotated by hand using the propeller. Rotational continuity was established throughout the engine and valve train. Thumb compression and suction was established on all six cylinders along with equal movement of the intake and exhaust rocker arms was observed when the crankshaft was rotated. All six cylinders were

examined using a lighted borescope and found to be unremarkable.

The left and right magnetos were examined at a magneto repair facility under the supervision of an FAA inspector. The inspector stated that both magnetos were in poor condition and showed evidence of little maintenance. The right magneto was placed on a test bench and produced spark on all posts through varying rpm ranges. The left magneto drive shaft would not rotate. The magneto was disassembled and excessive wear on the bearing race attached to the shaft was observed. The inspector stated that the wear on the bearing race allowed the magnets to contact the magneto housing, which grounded the magneto. The inspector added that the bearings were in poor condition and the grease appeared to be very old.

Additional Information

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Injuries to Persons

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Damage to Aircraft

Narrative damage to aircraft place holder

Other Damage

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Communications

Narrative communications place holder

Flight recorders

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Medical and Pathological Information

The Bingham County Coroner's Office, Blackfoot, Idaho, performed an autopsy of the pilot. The pilot's cause of death was blunt force trauma.

The FAA's Forensic Sciences Laboratory performed toxicology testing on the pilot's tissue samples, which identified acetaminophen and ibuprofen in the urine.

Fire

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Survival Aspects

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Tests and Research

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Organizational and Management Information

Narrative organizational and management information place holder

Useful or Effective Investigation Techniques

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Administrative Information

Investigator In Charge (IIC):	Cawthra, Joshua		
Additional Participating Persons:	Kevin Hanson; Federal Aviation Administration; Salt Lake City, UT Kathryn Whitaker; Piper Aircraft; Vero Beach, FL Troy Helgeson; Lycoming Engines; Williamsport, PA		
Original Publish Date:	November 19, 2020	**Investigation Class:**	2
Note:	The NTSB traveled to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98775		