



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

March 11, 2019

AIRFRAME AND ENGINES EXAMINATION

WPR19FA093

This document contains 19 embedded photos.

A. ACCIDENT

Location: Pahokee, FL
Date: March 8, 2019
Aircraft: Piper PA-23-250, Registration N5894Y, Serial #27-3048
NTSB IIC: Samantha Link

B. EXAMINATION PARTICIPANTS:

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Aviation Accident Investigator
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C. SUMMARY

Examination of the airframe and engines was conducted on March 11, 2019 at the facilities of Florida Air Recovery and Storage in Fort Pierce, Florida. No anomalies were noted with the airframe or engines that would have precluded normal operations.

D. DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

- Fuselage
 - o The top of the cabin, aft fuselage, and empennage were separated from the wings.
 - o The main wing spar remained continuous throughout.
 - o The floorboards were separated from the structure.
 - o The sides of the cabin and nose section, including the forward baggage compartment, were separated from the fuselage.
 - o The instrument panel remained attached to the airframe and structure forward of the main wing spar.

- A JPI 760 engine monitoring unit was found installed onto the instrument panel. It was removed and send to the NTSB Recorders Laboratory for further examination.
- o The forward cabin door was not present within the wreckage.
- o Flight control cable continuity was established throughout the airframe.
- o The fuel system was breached consistent with impact related damage.
 - Air was blown through the airframe's fuel lines with no blockages noted
- o The fuel control panel within the cockpit exhibited impact damage and only remained attached to the airframe by cables and fuel lines.
 - The left and right fuel tank selector hands were near the OUTBOARD tank positions.
- o The crossfeed selector lever was in the "OFF" position
 - Air was blown through the crossfeed valve and it operated normally in each position.
- o All six seats were present:
 - Seat #1 was found separated from the airframe, but still within the wreckage.
 - The seat belt remained attached to its respective attachment points and was found buckled, however, it was cut by first responders.
 - Seat #2 was found within the wreckage partially attached to its seat rails
 - The seat belt remained attached to its respective attachment points and was found buckled, however, it was cut by first responders.
 - Seat #3, was found separated from the airframe
 - The seat belt remained attached to its respective attachment points and was found buckled.
 - Seat #4 was found separated from the airframe
 - The seat belt remained attached to its respective attachment points and was found buckled, however, it was cut by first responders.
 - Bench Seat #5 and #6 were found separated from the airframe
 - The seat belts remained attached to their respective attachment points.
 - The seat belt for #5 was buckled, however, cut by first responders
 - The seat belt for #6 was found not buckled.
- Left Wing
 - o Exhibited crush damage throughout.
 - o Left engine truss mount was fractured and the engine remained attached by cables, lines, and hoses.

- o The engine cowling was separated from the wing.
- o The left wingtip fuel tank was not present.
- o The inboard fuel bladder was torn from its mounts and breached; no fuel was present.
 - The filler opening remained attached to the fuel bladder and the cap was intact.
- o The fuel strainer was removed from the airframe.
 - The screens were dark colored
 - Particles were present on the surface of the screens consistent with having been submerged in dirty water.
- o The fuel selector valve was observed in an intermediate position and would not allow the passage of low air pressure.
 - The valve was moved through its different positions and air passed through accordingly with no blockages or debris noted.
- o The electric fuel pump in the nacelle was observed to have an area of dark staining around the pump's inlet and adjacent fitting. The color of the stains were blue along the edge and became dark brown towards the center of the discolored area. The discoloration continued onto the nacelle panel below the pump.
 - The electric fuel pump wires were electrically connected to a 12V power source and the pump was able to pump water from the bucket.
- Right Wing
 - o The right wing exhibited crush damage throughout.
 - o The right engine truss mount was fractured, and the engine remained attached by cables, lines, and hoses.
 - o The engine cowling was removed from the wing.
 - o The right wingtip fuel tank was found separated from the wing.
 - o The outboard fuel filler cap remained intact.
 - o The inboard fuel bladder was torn from its mounts and breached.
 - The filler opening remained attached to the bladder and the cap was intact
 - o The fuel strainer was found intact and was removed.
 - The screens were intact and limited debris was observed.
 - o The fuel selector valve was observed in the OUTBOARD position.
 - The valve was moved through its different positions and air passed through accordingly with no blockages or debris.
 - o The electric fuel pump in the nacelle was connected to a 12V power source and the pump was able to pump water from a bucket.
- Empennage
 - o The empennage was mostly intact and undamaged

- o The stabilator remained attached to its hinges and the stops were unremarkable.
- o The stabilator trim tab remained attached to the stabilator
- o The stabilator trim actuator was partially separated from its mount
 - The jackscrew was extended about 0.5 inch which corresponds to a full tab up (nose down) setting.
- o The rudder remained attached to its hinges.
 - The rudder stops were intact and unremarkable.
- o The rudder trim tab remained attached to the rudder
- o The rudder trim actuator jackscrew was not extended which corresponds to a full tab right (nose left) trim setting.

1.1 Airframe photos



Figure 1: Instrument Panel



Figure 2: Left Wing

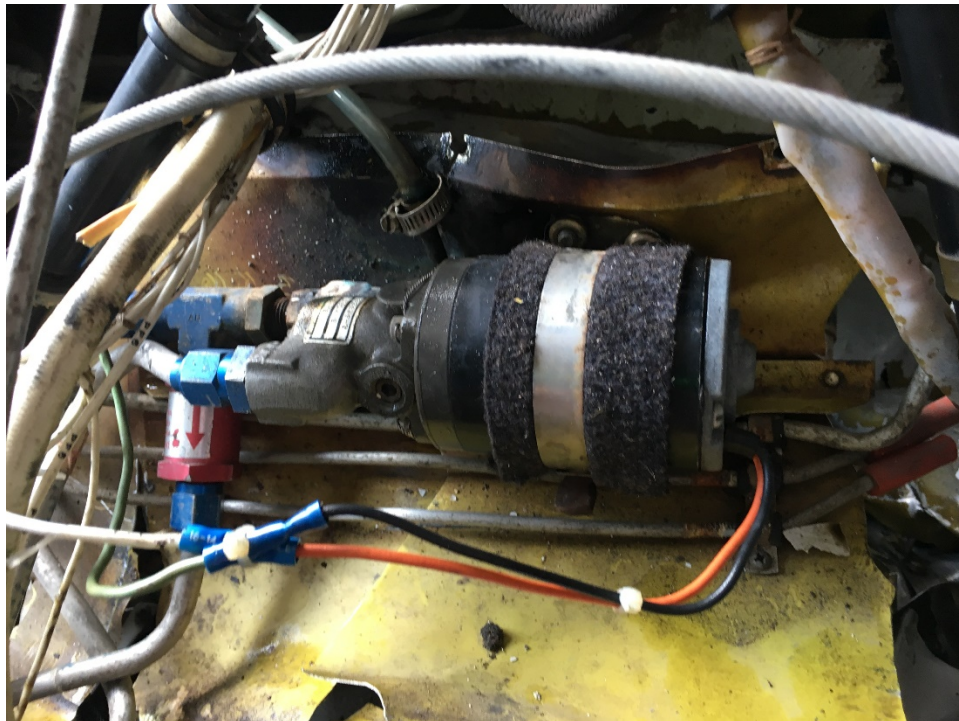


Figure 3: Left Wing Electric Fuel Pump



Figure 4: Fuel Inlet for the Left Wing Electric Boost Pmp



Figure 5: Right Wing



Figure 6: Empennage, Aft Fuselage, and Cabin Area



Figure 7: Left Wing Fuel Strainer

2.0 Left Engine Examination

- Visual inspection indicated no obvious anomalies that would have precluded normal operations.
- The side of the spinner was crush inward near the root of one of the propeller blades.
- The spark plugs were removed and exhibited normal operating wear signatures.
 - It was noted that the even side cylinders were oily.
- The fuel nozzles were removed from the engine and were clear of debris.
- The engine rotated freely when rotated by hand.
 - Thumb compression was established throughout.
 - The accessory gears rotated.
 - The valves moved evenly throughout.
- The Hartzell propeller blades were feathered.
 - One blade had a slight aft bend.
- Both magnetos were remained attached to the engine. They were removed and cleaned/dried.
 - When rotated by hand, both magnetos sparked from all leads.
- The cylinders were borescoped.
 - The valves, piston, and cylinder walls exhibited normal operating signatures.
 - Some rust was observed on the cylinder walls consistent with the engine being submerged.
- The oil pickup screen was removed and was clear of debris.

- The propeller governor was removed from the engine and the screen was clear of debris.
- The fuel servo was found fracture separated at the flange.
 - When manipulated by hand, both the throttle and mixture arms moved freely from stop to stop.
 - The fuel inlet screen was clear of debris.
- The fuel pump was broken free from the engine.
 - The pump was disassembled, and no anomalies were noted.
- The oil filter was removed and cut open.
 - It was clear of debris.

2.1 Left Engine Photos



Figure 8: Left Engine Propeller Blades

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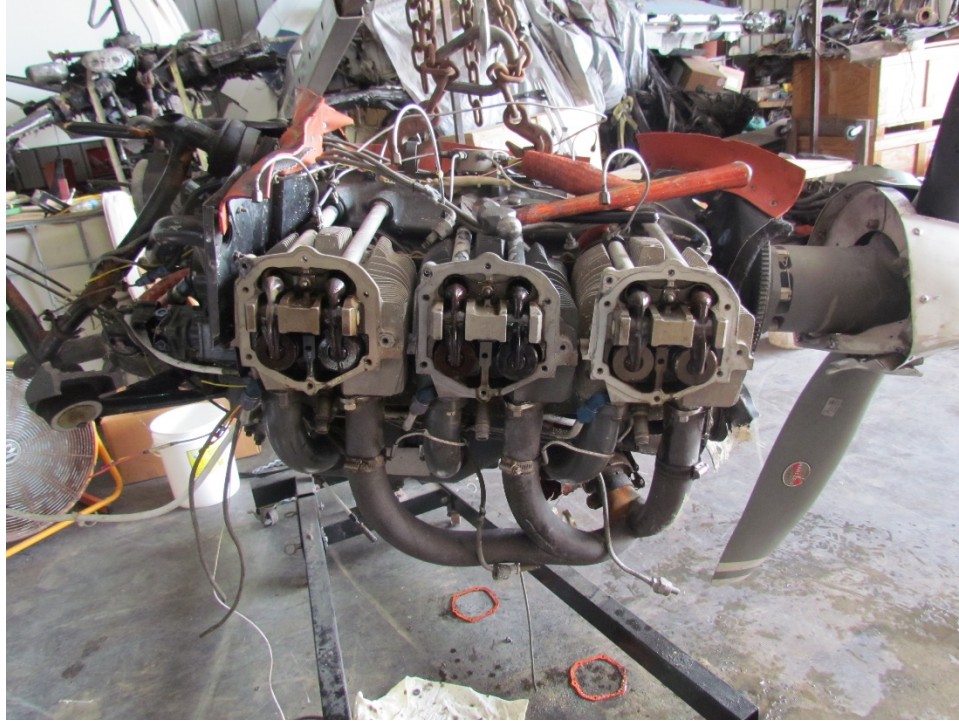


Figure 9: Even Cylinder Side of Engine



Figure 10: Odd Cylinder Side of Engine



Figure 11: Upper Spark Plugs



Figure 12: Fuel Nozzles



Figure 13: Engine Driven Fuel Pump

3.0 Right Engine Examination

- Visual inspection did not reveal any obvious anomalies that would have precluded normal operations.
- The starter ring gear was pushed aft and fractured around the crankshaft.
 - The belt was not present.
- The spinner was crushed inward and exhibited spiral fracture damage.
- Both propeller blades were bent aft about midspan.
 - One blade had a second bend in it about 1/3 from the blade tip.
- The spark plugs were removed from the engine and exhibited normal operating signatures.
 - Some rust was observed on the electrodes consistent with the airplane being submerged.
- The fuel nozzles were removed from the engine and were clear of debris.
- The magnetos were removed from the engine and cleaned/dried.
 - When rotated with a drill, spark was observed from all leads.
- The engine was rotated by hand at the propeller.
 - Thumb compression was established throughout.
 - The accessory gears rotated.
 - The valves moved evenly throughout.
- The cylinders were borescoped.
 - The valves, piston, and cylinder walls exhibited normal operating signatures.
- The oil pickup screen was removed, and some carbon despoths were observed within it.
- The fuel servo was found fracture separated from the engine.
 - The fuel inlet screen was clear of debris.
 - Both the throttle and mixture arms moved freely when manipulated by hand.
- The fuel pump was found fracture separated from the engine.
- The oil filter was removed from the engine and cut opened.
 - The filter was clear of debris.

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3.1 Right Engine Photos



Figure 14: Front of Right Engine

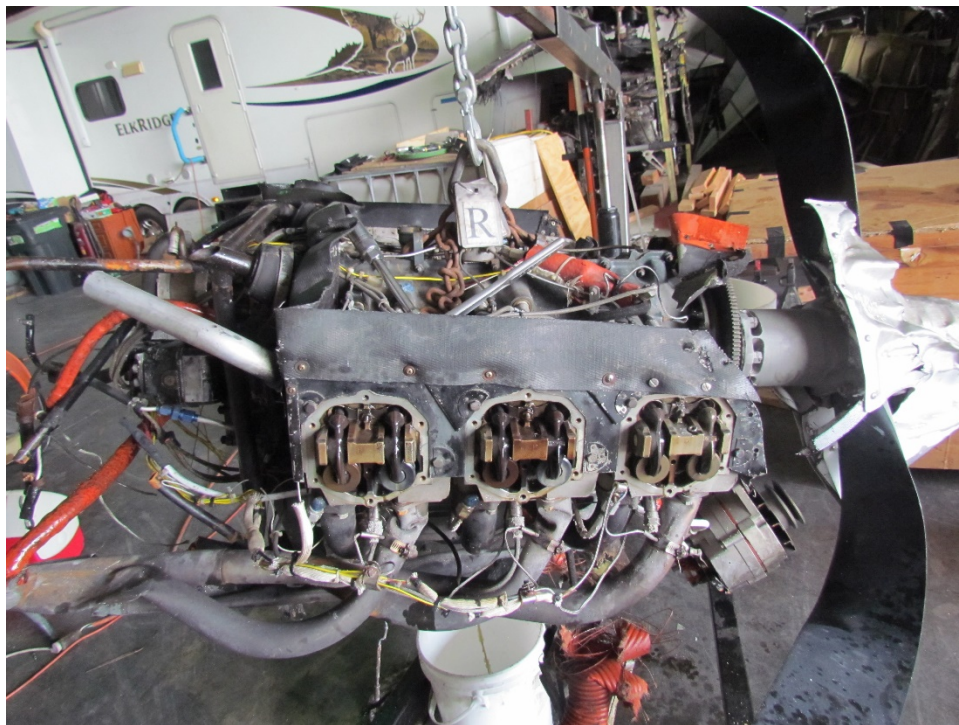


Figure 15: Even Side Cylinders



Figure 16: Odd Side Cylinders

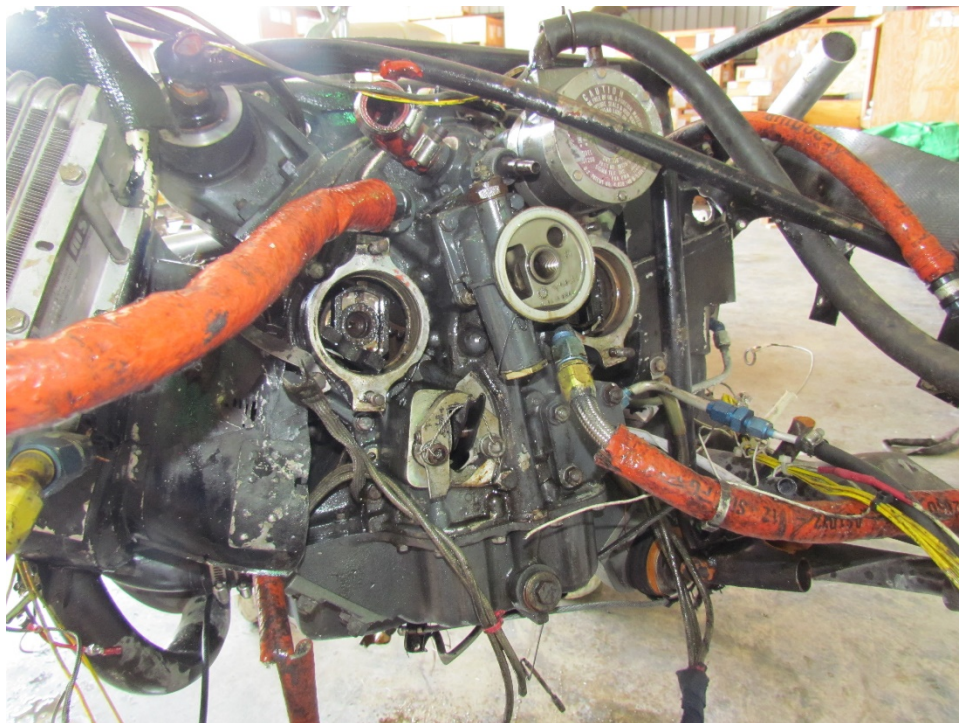


Figure 17: Accessory Section of Engine



Figure 18: Spark Plugs and Fuel Nozzles



Figure 19: Oil Pickup Screen

END.

Submitted by: Samantha Link