

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA24LA211

WRECKAGE EXAMINATION

January 29, 2025

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A. ACCIDENT

Location: Apopka, FL
Date: May 8, 2024
Time: 1130 EDT
1530 UTC
Airplane: N908DK; Piper PA-32-300

B. WRECKAGE EXAMINATION

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Investigator	Kurt Gibson National Transportation Safety Board Washington, DC
Party Coordinator	Kris Wetherell Piper Aircraft Vero Beach, FL

C. SUMMARY

On May 8, 2024, about 1130 eastern daylight time, a Piper PA-32-300, N908DK, was substantially damaged when it was involved in an accident near Apopka, Florida. The flight instructor and student pilot were not injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 instructional flight.

D. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

The examination was conducted at the owner's hangar where the airplane had been recovered.

1.1 Fuselage

The main fuselage revealed deformation of the firewall, engine mount and nose landing gear. The balance of the fuselage revealed some minor impact related deformation. Due to the duration that the wreckage had been stored

prior to the off-site investigation several fuel lines and other locations in the wreckage revealed the presence of mud wasp nesting material. The main cabin doors were not damaged and were functional. The nose baggage door was intact and attached. Flight control continuity of all primary flight control cables was confirmed.



Photo 1: View of the fuselage as first seen at the owner's hangar.

1.2 Empennage

The vertical stabilizer and rudder remained attached to the aft fuselage and did not reveal any damage. The rudder remained attached to the vertical stabilizer at all hinges. Both rudder control cables remained attached to the rudder horn. Rudder control continuity was confirmed from the rudder to the rudder pedals in the forward fuselage. The stabilator was attached to the empennage on-site but had been removed by recovery personnel. The stabilator balance weight remained attached to the stabilator control tube. Control continuity for the stabilator was confirmed from the cable ends that attach to the control tube to the base of the control column in the forward cabin. The stabilator trim cables and the threaded rod portion of the actuator had been removed from the trim actuator drum during recovery. Stabilator trim cable continuity was confirmed from the cable ends at the empennage to the trim control wheel in the forward cabin.



Photo 2: View of the vertical stabilizer and attached rudder.



Photo 3: View of the stabilator with attached stabilator trim.

1.3 Aircraft Wings

The left-wing separated just outboard of the pitot static mast due to a collision with an approximately four-inch diameter tree during the landing sequence. The left-wing inboard section, inboard of the pitot static mast, remained attached to the fuselage on-site, but had been removed from the airframe by recovery personnel. The left-wing flap and aileron remained attached to the wing on-site. The flap was removed by recovery personnel and revealed some impact related deformation near the second hinge. The left aileron

remained attached to the outboard portion of the wing and was deformed by impact forces. The left aileron balance weight remained attached to the aileron. The left aileron bellcrank remained attached and in-place inside the wing with both aileron cables attached. Left wing aileron continuity was confirmed from the wing root to the bellcrank. The left-wing fuel tip tank was shattered by impact forces. The pitot static mast remained attached to the left wing and was not damaged. The left-wing leading edge lift detector was intact and did not appear to be damaged.



Photo 4: View of the inboard section of the left wing.



Photo 5: View of the impact separated outboard section of the left wing.



Photo 6: View of the impact on the leading edge of the left wing.

The right wing remained attached to the fuselage on-site and was removed from the fuselage by recovery personnel. The wing was intact and displayed a small dent on the underside of the wing near the attachment point of the tip tank. The right flap and aileron remained attached to the right wing at all hinges on-site but were removed from the wing by recovery personnel. Aileron cable continuity was confirmed from the right-wing root to the aileron bellcrank and pushrod.



Photo 7: Overview of the right wing.



Photo 8: View of the right wing with flap and aileron laid out.

1.4 Landing Gear

The right main landing gear remained attached to the wing. The right main landing gear fairing was partially broken. The left main landing gear remained attached to the inboard section of the left wing. The fixed nose landing gear was deformed up and aft by impact forces.

1.5 Cockpit

The throttle and mixture controls were found in a position close to full aft. The propeller control was found at about mid-range. The alternate air door was closed. Throttle, propeller control and mixture control cable continuity and function were confirmed. Alternate air control cable continuity and function was also confirmed. The hour-meter read 00757.0. The fuel selector was in the left main tank selected position and was in a tactile detent.



Photo 9: View of the left side of the cockpit. (Piper Photo)



Photo 10: View of the right side of the cockpit. (Piper Photo)



Photo 11: View of the fuel selector in the cockpit. (Piper Photo)

1.6 Survivability

The left and right pilot seats and seats number three and four had been removed from the fuselage at the time of the off-site investigation. The owner reported that both occupants had utilized their lap and shoulder restraints during the flight and off-field landing event. Both the left and right pilot seat frames displayed some bending to the left. The left outboard lap belt attachment for seat number one, and both inboard lap belt attachments for seats three and four had been removed by recovery personnel. Both pilot shoulder harnesses remained attached to the inertia reels. The inertia reels were tested by hand and were found to function correctly.

1.7 Fuel/Fuel System

Three fuel caps were observed during the off-site investigation. They were located in the fuselage. All three displayed gaskets that were pliable. No fuel remained in the left-wing fuel tanks during the off-site investigation. The main tank and tip tank fuel screens were clean and unobstructed. No fuel was present in the right-wing fuel tanks during the off-site investigation. The main and tip fuel tank screens were clean and unobstructed.

The engine fuel feed line at the firewall revealed the presence of mud wasp nesting material. This was cleaned from the line and from other fuel lines to enable low pressure air testing of the fuel system. The left main fuel tank line at the wing-root displayed some white material that appeared consistent with Styrofoam. Styrofoam blocks were used during the recovery of the airplane. This white material was removed from the fuel line prior to low pressure air testing. Using low pressure air, all fuel lines were found to be clear. Air was flowed through the entire fuel system, including confirmation of appropriate flow in all of the fuel selector positions. Each fuel selector position exhibited a tactile detent. Breached fuel line portions were tested separately and were found to be clear.

No fuel remained in the fuel selector valve / fuel strainer. The fuel selector valve/fuel strainer fuel screen was clean. The electric fuel boost pump was tested using a 12-volt power source. The pump motor was observed to run smoothly during this test.



Photo 12: Overview of the three fuel caps found in the fuselage. (Piper Photo)



Photo 13: Disassembled fuel strainer. (Piper Photo)

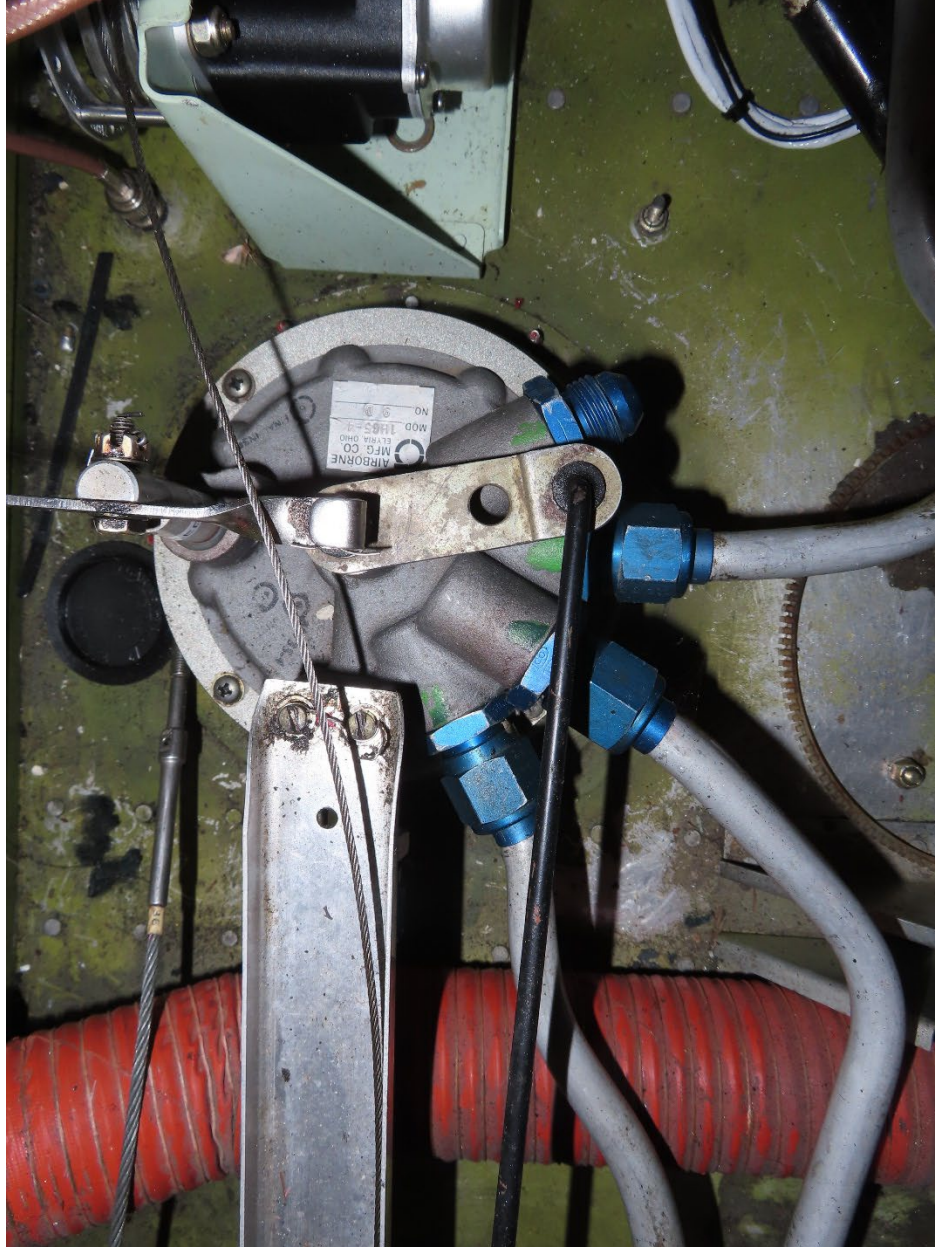


Photo 14: View of the fuel selector valve. (Piper Photo)



Photo 15: View of the electric fuel pump. (Piper Photo)

2.0 Engine Examination

Due to the mounting of the engine, the crankshaft was unable to be rotated at the time of the examination. The rocker box covers were removed and the rocker arms, valve stems, and valve springs were visually examined. The components displayed normal operating and lubrication signatures.

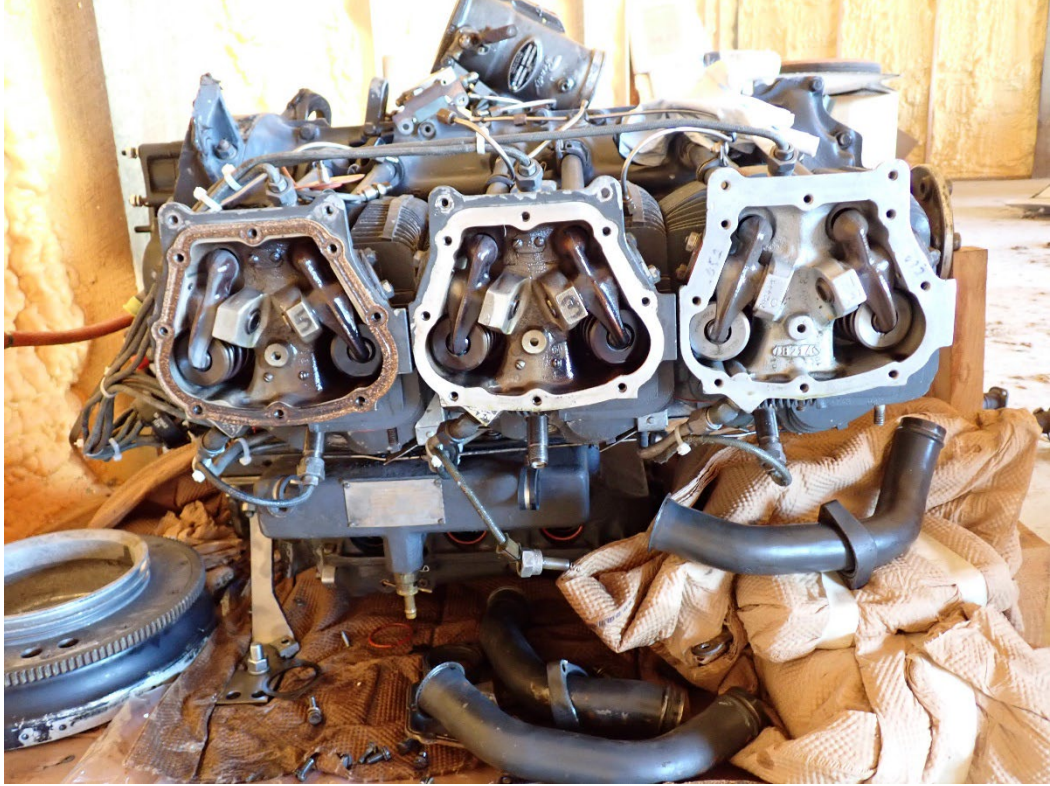


Photo 16: View of the Nos. 1, 3, and 5 cylinder heads with rocker covers removed.



Photo 17: View of the Nos. 2, 4, and 6 cylinder heads with rocker covers removed.

2.1 Induction and Exhaust System

The induction system was examined and there were no signs of induction leaks. The induction tubes were removed and there were no obstructions or anomalies found. The throttle body was intact, and the throttle valve operated normally when actuated manually. The engine air filter appeared clean. The engine induction air tubing revealed an impact related crease but remained open.



Photo 18: View of the engine air filter. (Piper Photo)

2.2 Magnetos

Both magnetos remained attached to the engine and were undamaged. The magnetos were removed for further examination and testing. Both magnetos were removed, and the drive shafts were capable of normal rotation. During magneto drive rotation, both magnetos were capable of producing a spark to each of their respective posts in the correct firing order. The impulse coupling on the left magneto was undamaged and operated normally during drive shaft rotation.

The right magneto was disassembled, and the internal components were visually inspected. The internal timing was verified to be correct and all the internal components displayed normal operating signatures. During magneto drive rotation the points were noted to open and close normally.

The left magneto was disassembled, and the internal components were visually inspected. The internal timing was verified to be correct and during magneto drive rotation the points opened and closed normally. Visual examination of the internal components revealed that the distributor block was cracked near the gear bushing; however, the crack did not extend the entire radius of the distributor block. The rest of the internal components displayed normal operating signatures and there were no signs of arcing.



Photo 19: View of the disassembled right magneto.

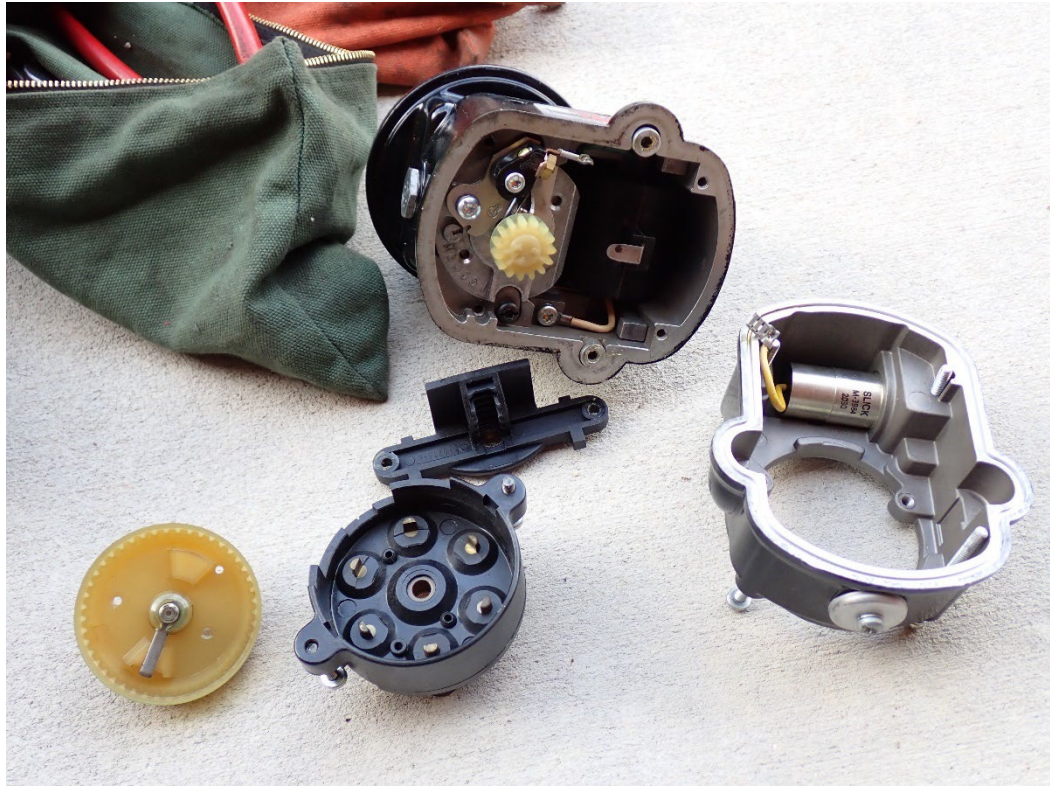


Photo 20: View of the disassembled left magneto.

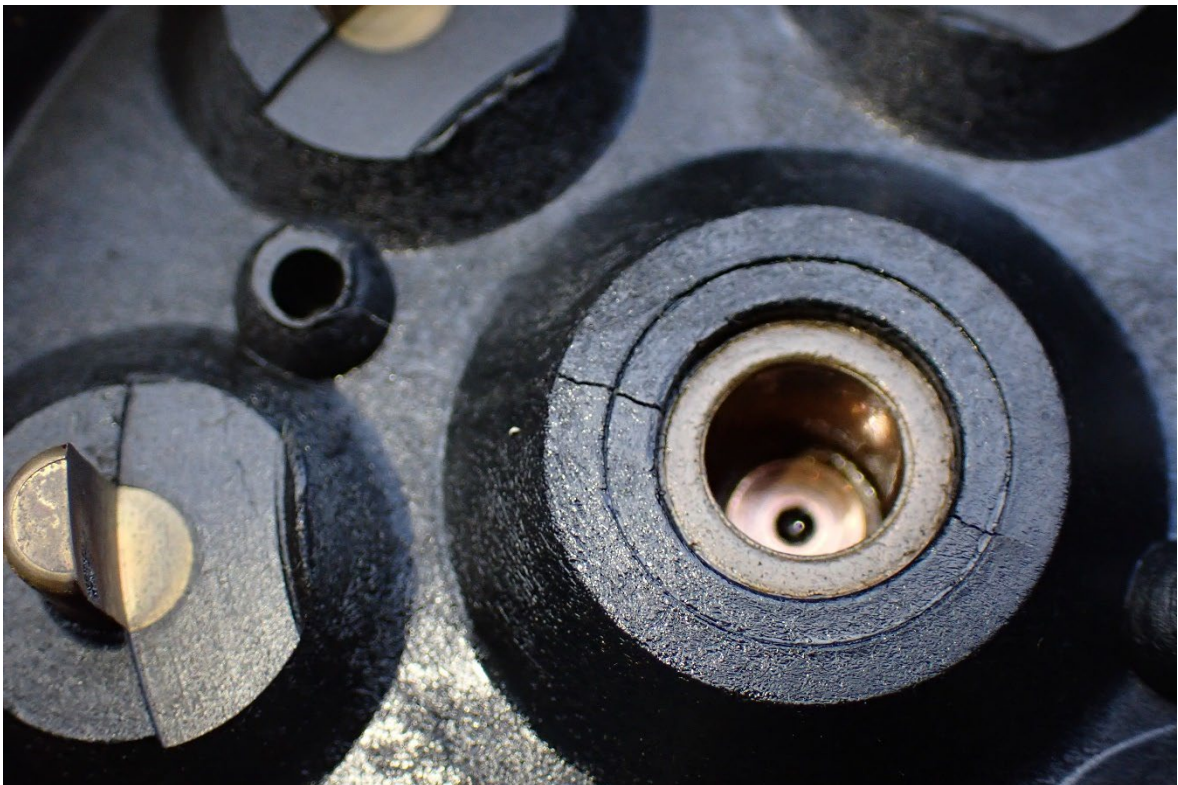


Photo 21: View of the cracked left magneto distributor block.

2.3 Fuel System

The fuel flow divider was disassembled, and the internal components were examined. The diaphragm remained in place and was pliable and there were no cracks or signs of leakage to the dry side of the diaphragm. A small amount of fluid consistent with fuel preservative oil was found within the fuel flow divider. According to the Lycoming party coordinator, after the engine run the fuel system was flushed utilizing a preservative. The fuel nozzles were removed from their respective cylinders and visually examined. The nozzles displayed normal operating signatures and besides for the fuel preservative oil in two of the nozzles, there were no obstructions observed. The fuel line that went from the fuel servo to the fuel flow divider was found to have remained with the airframe and not sent with the engine for the test run. Both ends of the fuel line were blocked with debris consistent with a mud-dauber nest. The mud-dauber nests were removed, and the line was found to be clear of obstructions. The fuel flow transducer remained with the airframe and was removed and checked for blockages. The transducer was unobstructed and the fuel flow measuring wheel rotated normally.

Submitted by:

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