

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA25FA201

WRECKAGE EXAMINATION

May 11, 2025

TABLE OF CONTENTS

A. ACCIDENT.....	3
B. WRECKAGE EXAMINATION.....	3
C. SUMMARY.....	3
D. DETAILS OF THE INVESTIGATION	3
1.0 ACCIDENT SITE	3
2.0 AIRFRAME EXAMINATION.....	6
2.1 Fuselage.....	6
2.2 Empennage	8
2.3 Aircraft Wings.....	10
2.4 Landing Gear.....	13
2.5 Cockpit.....	15
2.6 Survivability.....	17
2.7 Fuel/Fuel System.....	17
3.0 ENGINE EXAMINATION	19
3.1 Induction and Exhaust System	21
3.2 Magnetos	22
3.3 Ignition System.....	24
3.4 Fuel System.....	25
3.5 Lubrication System	30
3.6 Vacuum Pump/System	32
4.0 PROPELLER EXAMINATION	33
5.0 AIRCRAFT INFORMATION	38

A. ACCIDENT

Location: Yulee, FL
Date: May 10, 2025
Time: 0938 EDT
1338 UTC
Airplane: N30689; PA-32R-300

B. WRECKAGE EXAMINATION

IIC Joshua Young
National Transportation Safety Board
Washington, DC

Party Coordinator Kris Wetherell
Piper Aircraft
Vero Beach, FL

Party Coordinator Dave Harsanyi
Lycoming Engines
Williamsport, PA

C. SUMMARY

On May 10, 2025, at 0938 eastern daylight time, a Piper PA-32RT-300, N30689, was destroyed when it was involved in an accident near Yulee, FL. The private pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

D. DETAILS OF THE INVESTIGATION

1.0 Accident Site

The airplane first impacted a branch about 40 ft up a tree which was located about 24 ft from the main impact crater. The estimated measurement of the descent angle was about 50° from the initial tree impact to the main impact crater. The wreckage came to rest upright about 15 ft from the main impact crater on a heading of about 264° magnetic. Some small branches were located near the ground crater, with diagonal cuts present on them, consistent with having been cut by the rotating propeller. The outboard section of the left wing was located near and to the right of the ground crater. Drag marks produced by the left wing were observed crossing a

residential driveway just prior to the ground crater. A majority of the wreckage was consumed by postaccident fire.



Photo 1: View of broken tree branches at initial impact.



2.0 Airframe Examination

2.1 Fuselage

The fuselage was destroyed by impact forces and post-impact fire. The cabin seating area remained attached to the firewall and engine. The cockpit location was destroyed by fire and did not yield any useful instrument or flight control position information. The fuselage came to rest upright and facing the initial impact crater. The cabin seating area, behind the pilot seats, contained remnants of two E-bikes, batteries and dog food. The nose baggage door was not located in the wreckage; the location of the nose baggage door was consumed by postaccident fire. The right front cabin entry door was damaged by impact forces and post-impact fire. It was separated from the fuselage and came to rest near the propeller.



Photo 4: Overview of the fuselage.



Photo 5: View of the right side of the fuselage.



Photo 6: View of the right front cabin entry door.

2.2 Empennage

The empennage was impact separated 80 inches aft of the aft wing spar and folded over the fuselage. The separated portion remained attached to the fuselage via the stabilator, rudder, and stabilator trim cables. The vertical stabilizer and rudder were destroyed by postimpact fire. About a 58-inch piece of the stabilator was found with about a 45-inch piece of stabilator trim attached. The rest of the stabilator and trim were consumed by postaccident fire. Both stabilator cables remained attached at the stabilator control tube and were continuous to the base of the control column. The cables remained attached at the control column. The stabilator balance weight remained attached to the stabilator control tube. The stabilator trim was measured at 0.4 inches extension on the forward side of the drum, which equates to a trim position between approximately half way between neutral and full nose down. Both rudder cables remained attached to the sector in the empennage and were continuous to the rudder pedal bar in the forward cabin. The cables remained secured at both ends.



Photo 7: View of the separation of the empennage.



Photo 8: View of the remaining stabilator under the engine.

2.3 Aircraft Wings

The right wing was consumed by a postaccident fire. A 106-inch portion of the right-wing main spar remained attached to the fuselage. The right aileron bellcrank was thermally separated from the wing. Both aileron cables remained attached to the bellcrank. The aileron balance cable was intact and complete from the left bellcrank to the right bellcrank. The aileron drive cable on the right side was partially burned away by an area of intense fire and re-solidified metal near the center of the cabin. Full aileron cable continuity was confirmed from each side of the re-solidified metal.

An 84-inch outboard portion of the left wing was impact separated and found about 15 ft from the main wreckage and was inverted. The aileron remained attached to the impact separated portion of the left wing. A 91-inch portion of the left main wing spar remained attached to the fuselage and exhibited thermal damage. The right flap was consumed by postaccident fire.

The left aileron bellcrank was separated from the wing and came to rest with the inboard portion of the wing. Both aileron cables remained attached to the bellcrank. The primary aileron cable on the left side was partially burned away by an area of intense fire and led into an area of re-solidified metal near the center of the cabin. The aileron drive chain at the control column was broken. Both aileron drive

cables remained attached to the drive chain. Full aileron cable continuity was confirmed from each side of the re-solidified metal.



Photo 9: View of the right wing.



Photo 10: View of the inboard portion of the left wing.



Photo 11: View of the impact separated portion of the left wing.

2.4 Landing Gear

The landing gear was found in the main wreckage and exhibited thermal damage. The nose landing gear displayed impact and post-impact fire damage and was found in a position between retracted and extended. The left main landing gear was found in an extended position with the down-lock engaged. The right main landing gear was found in an extended position.



Photo 12: View of the nose landing gear. (Courtesy of Piper)



Photo 13: View of the left main landing gear. (Courtesy of Piper)



Photo 14: View of the right main landing gear. (Courtesy of Piper)

2.5 Cockpit

The cockpit was consumed by postaccident fire and was unrecognizable. The flap selector was impact and post-impact fire damaged. It was found in the flaps 25° extended position. This position was verified by examination of the flap torque tube.



Photo 15: View of the cockpit area.



Photo 16: View of the throttle quadrant.

2.6 Survivability

All five unoccupied seats remained attached to the fuselage floor. The left front pilot seat (utilized) remained partially attached to the floor. All seats were thermally reduced to their metal components. All lap belts and shoulder harnesses were consumed by fire. A lap belt buckle was located at the left pilot seat position and was latched.



Photo 17: View of the pilot's seatbelt buckle.

2.7 Fuel/Fuel System

Both the left and right wing fuel caps remained installed in their respective wing attach points. The left main fuel tank finger screen was observed free of debris. The right main fuel tank finger screen was covered in molten metal due to postaccident fire.



Photo 18: View of the left fuel tank cap.



Photo 19: View of the left main fuel tank finger screen.



Photo 20: View of the right fuel tank cap.

3.0 Engine Examination

With the top spark plugs removed, the engine was rotated manually by hand and suction and compression were confirmed on all cylinders. Crankshaft and valvetrain continuity were confirmed through multiple rotations of the propeller by hand. A lighted borescope inspection was performed on all cylinders and was found unremarkable.



Photo 21: View of the bottom of the engine at the accident site.



Photo 22: View of the top of the engine at the accident site.



Photo 23: View of the back of the engine. (Courtesy of Lycoming)

3.1 Induction and Exhaust System

The induction and exhaust system exhibited impact and thermal damage. A portion of the air filter was observed at the accident site and was unobstructed.



Photo 24: View of the remnants of the induction air filter.

3.2 Magnetos

Both left and right hand magnetos were found tightly installed to the accessory section of the engine with signs of thermal damage. The left hand magneto was of the conventional type while the right hand was a electronic EIS type. The left hand magneto was rotated by hand and using an electric drill but would not produce spark consistent with the level of thermal damage observed. The right hand EIS magneto had 20-volt power source applied and the green led light illuminated briefly. The light quickly diminished and would not illuminate when with either the timing or power port had voltage applied.

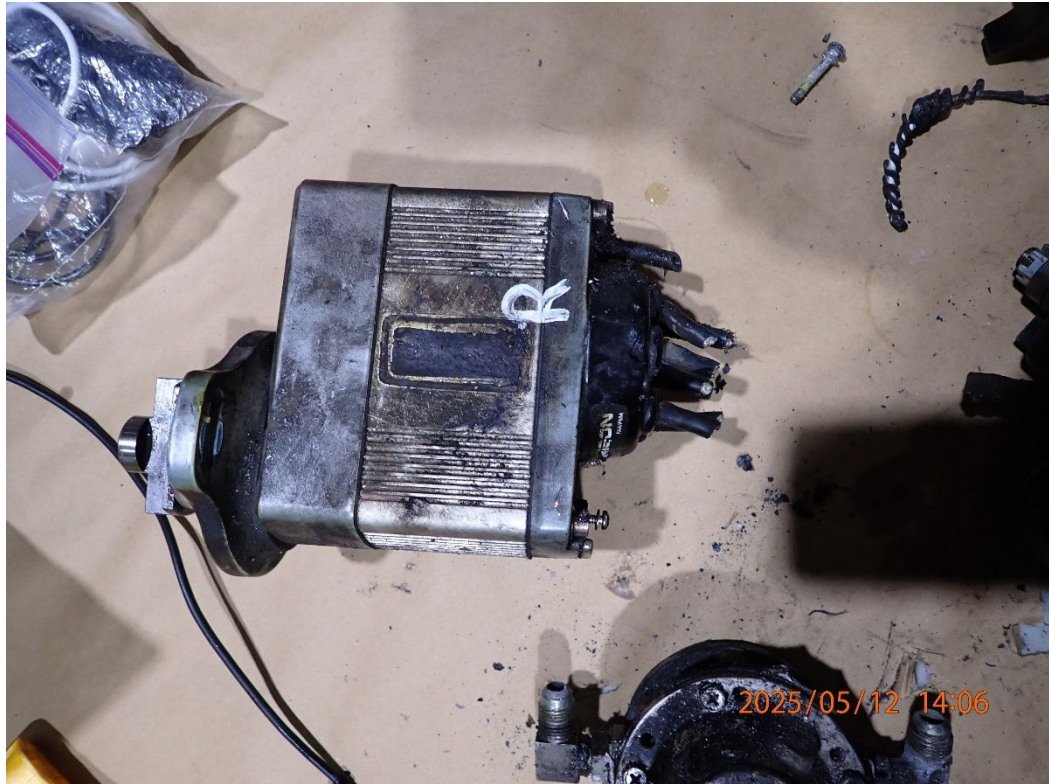


Photo 25: View of the right electronic magneto.



Photo 26: View of the left magneto. (Courtesy of Lycoming)



Photo 27: View of the disassembled left magneto.

3.3 Ignition System

Both ignition harnesses sustained cuts, abrasions, and thermal damage. All sparkplugs were Tempest UREM38E massive electrode type and found to have normal coloration and wear patterns when compared to a champion Check-a-plug chart.



Photo 28: View of the spark plugs and fuel injectors.

3.4 Fuel System

The engine driven fuel pump was found to be impact fractured from the accessory case. The fuel injector servo was found fractured from the lower side of the engine but attached to its throttle cable. The throttle plate was found in the closed idle position and moved freely when actuated by hand. The fuel inlet screen was found free and clear of any debris and unobstructed. The diaphragm was found intact and suffered thermal damage in the form of shrinkage. The brass plug was found to have the AD compliance "G" stamped. The bullet style impact tube screen was clear and unobstructed. The fuel manifold was found tightly installed to the top of the engine with all fuel injectors lines intact and tightly installed. The manifold was disassembled and found free and clear of any debris. The diaphragm was intact with no tears or debris observed. The odor of fuel was present upon disassembly of the unit. All fuel injectors were removed except number 5 due to impact damage and found to be free and clear of any blockages.



Photo 29: View of the engine driven fuel pump.



Photo 30: View of the disassembled engine driven fuel pump. (Courtesy of Lycoming)



Photo 31: View of the throttle plate as first seen at the accident site. (Courtesy of Lycoming)



Photo 32: View of the fuel injector servo. (Courtesy of Lycoming)

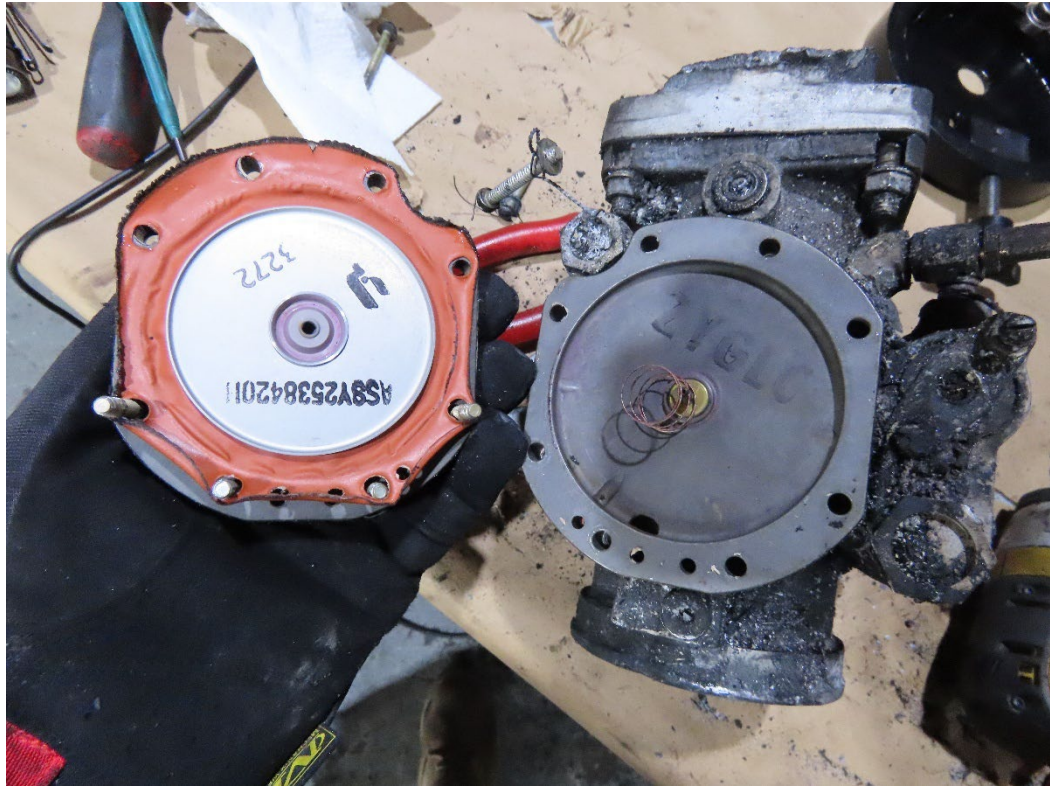


Photo 33: View of the fuel injector servo diaphragm. (Courtesy of Lycoming)

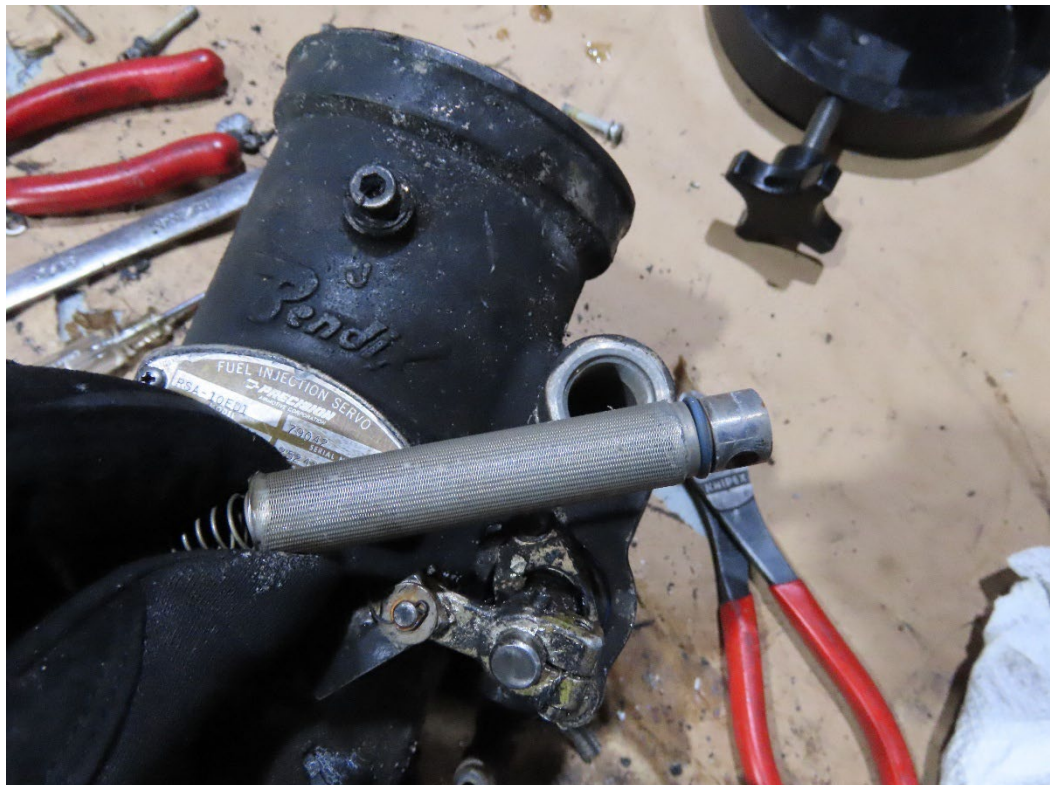


Photo 34: View of the unobstructed fuel inlet screen. (Courtesy of Lycoming)

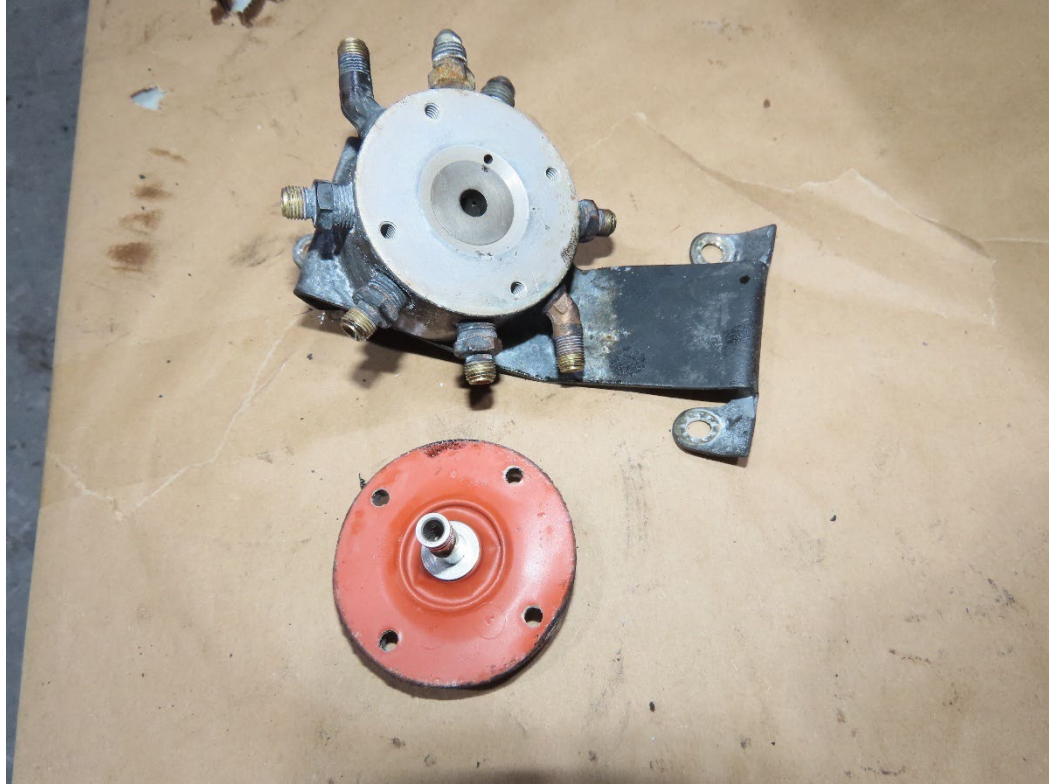


Photo 35: View of the disassembled fuel manifold. (Courtesy of Lycoming)

3.5 Lubrication System

The oil filter remained attached to the engine accessory case and was removed and cut open for examination. The oil filter pleats were clean with no debris noted. The oil suction screen was removed and examined and was unobstructed.



Photo 36: View of the cut open oil filter and unobstructed pleats.



Photo 37: View of the unobstructed oil suction screen. (Courtesy of Lycoming)

3.6 Vacuum Pump/System

The vacuum pump remained installed in the accessory case of the engine and was removed for examination. The drive coupling remained intact and in place. The carbon rotor and veins were all found intact.



Photo 38: View of the disassembled vacuum pump.

4.0 Propeller Examination

The three blade Hartzell propeller remained attached to the propeller mounting flange on the engine. The propeller blades exhibited aft bending, chordwise scratching, some leading-edge gouges, and leading-edge polishing. The propeller spinner revealed rotational deformation consistent with the propeller turning at the time of impact.

The prop governor was found tightly installed to the engine, removed, and rotated by hand with no issues. Oil pumped from the unit during manual rotation and the oil filter screen was found unobstructed. The propeller governor control arm was found in a full forward position at the accident site.



Photo 39: View of the propeller at the accident site. (Courtesy of Piper)



Photo 40: Propeller leading-edge polishing and gouging, and chordwise scratching. (Courtesy of Piper)



Photo 41: View of propeller blade aft bending. (Courtesy of Piper)



Photo 42: View of propeller blade aft bending. (Courtesy of Piper)



Photo 43: View of the propeller governor. (Courtesy of Lycoming)



Photo 44: View of the unobstructed governor oil screen. (Courtesy of Lycoming)

5.0 Aircraft Information

According to FAA airworthiness records, the airplane was manufactured in 1978 and was purchased by the pilot in 2014. It was powered by a Lycoming IO-540-K1G5, 300-horsepower engine equipped with a Hartzell propeller. According to airplane maintenance logbooks, the most recent annual inspection was completed on October 10, 2024, at a total time of 3441.04 hours.

Submitted by:

Joshua Young
Air Safety Investigator