

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



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AIRFRAME AND ENGINE EXAMINATION FACTUAL REPORT

July 6, 2022

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A. ACCIDENT

Location: Warm Springs, Georgia
Date: June 26, 2022
Time: 1410 Local
1810 UTC
Airplane: Piper PA-24-250, N14FC

B. AIRFRAME AND ENGINE EXAMINATION FACTUAL REPORT

NTSB IIC Adam Gerhardt
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Atlanta, Georgia

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Piper Aircraft
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C. SUMMARY

On June 26, 2022, about 1410 eastern daylight time, a Piper PA-24-250 airplane, N14FC, was substantially damaged when it was involved in an accident near Warm Springs, Georgia. The private pilot and passenger sustained serious injuries. The airplane was operated by the pilot as a personal flight conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91.

D. DETAILS OF THE INVESTIGATION

A Federal Aviation Administration (FAA) inspector traveled to accident site on June 26, 2022, shortly after the accident occurred. The inspector performed a cursory examination of the airplane, its systems, and evaluated the fuel on-board. He subsequently supervised the recovery of the aircraft the day after the accident. The airplane was recovered to Atlanta Air Recovery, Griffin, Georgia. On June 27, 2022, the FAA inspector and Piper Aircraft and Lycoming Engines party members examined the airframe and engine. The NTSB investigator-in-charge did not travel to the scene

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of the accident. This document contains the factual findings related to the accident site observations and the airframe and engine examination.

E. FAA INSPECTOR ACCIDENT SITE OBSERVATIONS

The following record are excerpts from the FAA inspector statement describing his observations at the accident site:

When I arrived at the aircraft, there was no smell of fuel and no post-crash fire. The outer one-third of the right wing was damaged and missing the tip tank. I could see one of the propeller blades standing up and virtually undamaged. The cabin door was broken open forward which the first responders said they had done to remove the passengers. The electrical power was off, and the ignition key selected to off. Mixture was in, throttle was out, prop was in, and carb heat in. Fuel selectors were selected to both main. I opened both main fuel tank filler caps and found no evidence of fuel. I opened the left tip tank and found approximately 3 gallons of fuel. I turned the fuel on and the gauges read $\frac{1}{4}$ on both wings and the electric fuel pump was running, it sounded dry. The fuel tanks did not appear breached. Walking back toward my truck I found the right wing tip tank about 15 to 20 yards behind the aircraft. I did look in the tank and it was empty.

On Monday June 27, 2022, I arrived at the accident scene with fellow inspector Samuel Gentry. While we waited for the recovery team, we investigated the area and found an impact spot approximately 25 feet up a pine tree. The tree was adjacent to where the right tip tank was found.

When the recovery team arrived they discussed having to cut the wings off the airplane to get it out. The aircraft was strapped and lifted up then the team cut the right wing off. We were very careful to watch and see if any fuel ran out. No fuel ran out or even dripped out. The aircraft was then slid aft. The straps were then repositioned and the airplane was slid around 180 degrees. Again the straps were repositioned and the airplane was lifted nose high to begin cutting the left wing off. We again paid attention to see if any fuel ran or dripped out of the wings. No fuel dripped from the left wing either.

The wings and the fuselage were loaded on to the recovery trailer. We then followed the recovery team to the Atlanta Air Recovery facility. When we arrived at Atlanta Air Recovery, I inspected the fuel bladders to see if they had been breached. The bladders did not appear breached other than where they were cut in half taking the wings off.

F. ENGINE EXAMINATION

The engine was a Lycoming O-540-A1A5, serial number L-799-40, engine. The engine remained attached to the aircraft firewall through the tubular engine mounts. The tubular mount was impact damaged and the engine was canted nose down about 20 degrees. The lower engine cowling was impact damaged. The engine induction air assembly was separated from the engine, crushed and was located in the engine lower cowling. The induction air filter was crushed. No foreign material was observed obstruction the filter. The right-side exhaust tubing was impact

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damaged. No obstruction was observed in the exhaust tubing or exhaust mufflers. The carburetor was impact separated from the engine.

The oil sump quick drain was impact damaged and no oil level reading was observed on the oil dipstick. Oil was observed coating the oil dipstick and valve train components. The engine was partially disassembled to facilitate the examination.

The crankshaft was rotated by turning the propeller and continuity of the crankshaft to the rear gears and to the valvetrain confirmed. Compression and suction were observed from all engine cylinders. The interiors of the cylinders were observed using a lighted borescope and no were anomalies noted.

The propeller was a McCauley B3D32C412-C, with controllable pitch. The propeller remained attached to the engine crankshaft flange. The propeller spinner remained attached to the propeller and was impact damaged. The propeller blade labeled "A" was rotated about 90 degrees in the hub, with the blade leading edge forward. No bending of the blade was noted. The propeller blade labeled "B" was rotated in the hub about 30 degrees and was bent aft about 20 degrees at about 8 inches outboard of the hub.

The blade shank snap rings were dislodged from the propeller hub. The propeller blade labeled "C" was curved aft about 80 degrees and exhibited leading edge paint abrasion. The blade shank snap rings for that blade were also dislodged from the hub. The propeller governor remained attached to the engine and no damage was noted.

The propeller control cable remained attached to the governor control arm and the arm was positioned near the governor full increase RPM stop. The propeller control knob in the cockpit was positioned fully forward. The governor drive spline was rotated freely by hand and oil was expelled from the governor as it was rotated. The governor oil screen was absent of debris.

The carburetor was impact fractured across the throttle bore and separated from the engine. The throttle control cable was broken at the cable rod end. The rod end remained attached to the carburetor throttle control arm. The mixture control cable remained attached to the mixture control arm. The cockpit throttle control knob was positioned fully aft and the mixture control knob fully forward. The fuel inlet fitting was fractured, and the fuel inlet hose separated from the carburetor.

The carburetor heat air box was crushed. The carburetor heat cable remained attached to the air box carburetor heat valve control arm. The cockpit carburetor heat control arm was positioned fully forward.

The carburetor was partially disassembled. No damage to the plastic fuel float assembly or other internal components was observed. No liquid was observed in the carburetor float bowl. The fuel inlet screen was unobstructed.

The engine driven fuel pump remained attached to the engine and no damage was noted. No liquid drained from the fuel pump fuel hoses as they were removed. The pump produced air pressure at the outlet port and suction at the inlet port when operated by hand. It was partially disassembled and no damage to the rubber diaphragms or internal check valves observed. No liquid was observed in the pump.

The aircraft fuel strainer bowl was removed, and the bowl observed about ½ full of blue liquid. Small debris was observed in the bottom of the bowl.

Both magnetos remained attached to the engine and no damage was noted. Both produced spark from all ignition towers when they were removed and rotated by hand. The spark plugs were undamaged and displayed normal combustion signatures.

Oil was observed in the engine. The oil sump quick drain was impact damaged. No oil level was observed on the oil dipstick. No metallic debris was observed in the oil suction screen or the engine oil filter.

G. AIRFRAME EXAMINATION

Fuselage

The fuselage exhibited impact damage including lower firewall damage and upward deformation to the cockpit area belly skin. The nose gear exhibited impact damage and was noted in the "up/retracted" position. No oil streaking was observed on the belly skin or upper engine cowling. The baggage door was observed in the "locked" position with no visible impact damage noted. The cabin door was impact damaged and partially separated from the fuselage.

The rear bench seat and its restraints remained attached to their respective attach points with no visible damage observed. The pilot and copilot seats and restraints remained attached to their respective mounts with impact damage noted to the seat frames. The lap belts were unlatched and were determined to be functional during field test; there were no shoulder harnesses installed for any seat.

The following cockpit control/switch positions were observed:

- Cabin Heat, Defrost, Cabin Air: All three controls were Off
- Engine Primer: Stowed
- Carburetor Heat: Off/Filtered Air

- Magneto Switch: Off
- Pitot Heat: Off
- Beacon: Off
- Turn and Bank Switch: On
- Landing Light: Off
- Electric Fuel Pump: Off
 - Note: FAA stated pump was on on-scene and he shut it off.
- Radio Master: Off
- Battery Master: Off
- AP: Off
- Gear Selector: Off
- Flap Lever: Stowed/0°
- Propeller Control: Forward/Fine Pitch
- Mixture Control: Forward/Rich
- Throttle Control: Aft/Closed Idle
- Tachometer Reading: 3721.8

The pilot and copilot control wheels remained attached to their respective shafts and impact damage was noted to the rudder pedal assembly. Flight control continuity was established from the cockpit to all flight control surfaces through were impact and or recovery separations exist.

The left- and right-wing fuel selectors were in the "Main" positions and was confirmed during field test with low-pressure air; no fuel was observed within the fuel lines during the field test. Fuel was observed within the lines during field test with fuel selectors in the "Tip Tank" position. Both fuel selectors were determined to be functional during field test.

The gascolator screen was clear of debris and the gascolator bowl contained a small amount of debris and a blue liquid consistent in color and odor to that of aviation-type gasoline. The filters of the two electric fuel pumps were clear of debris and residual fuel was observed within their filters. The fuel pumps were determined to be functional during field test with a DC power source and water.

Left Wing

The left wing remained attached to the fuselage and was separated about 14" from the wing root by recovery personnel. Leading-edge impact damage was noted to the wing. The lift detector was determined to be functional during field test. Impact damage was noted to the pitot head and its port was obstructed with an organic material consistent to that of wood. The main gear exhibited impact damage and its actuator cable was retracted consistent with the gear in the "up/retracted" position.

The aileron remained attached to the wing with impact and or recovery damage observed; Its control cables were recovery separated near the wing-root and control continuity was established. The flap remained attached to the wing with about 15" of its inboard section separated by recovery; impact damage was noted to the flap and its inboard section was observed in the "up/0°" position.

The tip tank remained attached to the wing with no visible breach observed; its fuel cap was seated to its receptacle and about 3 gallons of blue liquid consistent in color and odor to that of aviation gasoline was observed within. The tip tank's pick-up screen was clear of debris. The main fuel cell was breached by recovery at the wing separation area. The main fuel cell's filler cap was seated to its receptacle and its pick-up screen and vent were clear of obstruction. Fuel line continuity was established from the firewall to the pick-up screen during field test with low-pressure air.

Right Wing

The right wing was separated by recovery personnel about 12" from the fuselage and was impact separated about 10' from the wing-root with impact damage noted to the wing. The main gear was impact damage and its control cable was retracted consistent with the gear in the "up/retracted" position. The flap remained attached to its mounts and was recovery separated about 17" from the fuselage; the flap was observed in the "up/0°" position. The aileron remained attached to its mounts and impact separated in two sections. The aileron control rod remained attached to its mounts and the aileron control cables were cut at the wing-root area by recovery personnel; flight control continuity was established.

The wingtip fuel tank was separated from the wing with impact damage noted. Its fuel line was pulled from its attach point with no fuel was observed within and its fuel cap was seated to its receptacle. The main fuel cell was breached from recovery separation of the wing; its filler cap was separated from its receptacle, and its pick-up screen and vent were clear of obstruction. Fuel line continuity was established from the firewall to the pick-up screen during field test with low-pressure air.

Empennage

The vertical stabilizer remained attached to its mounts with impact and or recovery damage noted to it lower leading-edge area. The rudder remained attached to its mounts with no visible damage observed; the rudder control cables remained attached to their respective attach points and were continuous to the cockpit area. Rudder control continuity was established.

The stabilator exhibited impact damage and remained attached to its mounts; the right stabilator was recovery separated about 25" from its supporting structure. Stabilator control cables remained attached to their respective attach points and

were continuous to the cockpit; flight control continuity was established. The stabilator trim tab and control rod remained attached to their respective attach points; Impact and or recovery damage was noted to the trim tab with the right trim tab separated at the recovery separation area. The stabilator trim barrel exposed about 4 jackscrew threads / 1/2" from the top of the assembly, indicative of a partial "nose up" trim setting.

H. MAINTENANCE RECORDS

According to maintenance records¹, on January 1, 2022, an annual/ 100-hour inspection was completed on the airplane. The airplane's tachometer time was noted as 3663.5, which resulted in 58.3 hours accumulated from the time of this inspection to the accident. The most recent engine overhaul was completed on August 18, 2005. The engine has accumulated 836 hours of time-in-service since that overhaul.

I. PHOTOGRAPHS AND FIGURES



Figure 1: View of the airplane at the accident site (FAA Photograph)

¹ The Public Docket contains photographs of excerpts of recent maintenance records.



Figure 2: View of the airplane at the accident site (FAA Photograph)



Figure 3: View of the airplane at the accident site (FAA Photograph)



Figure 4: Overview of the cockpit at the accident site (FAA Photograph)



Figure 5: View of the fuel instrumentation, with power turned on to the aircraft (FAA Photograph)



Figure 6: View of the fuel instrumentation with power turned off to the aircraft (FAA Photo)



Figure 7: Fuel selector as found postaccident (FAA Photo)



Figure 8: View of top and bottom spark plugs



Figure 9: Overview of the engine and propeller



Figure 10: Overview of the left wing and fuselage

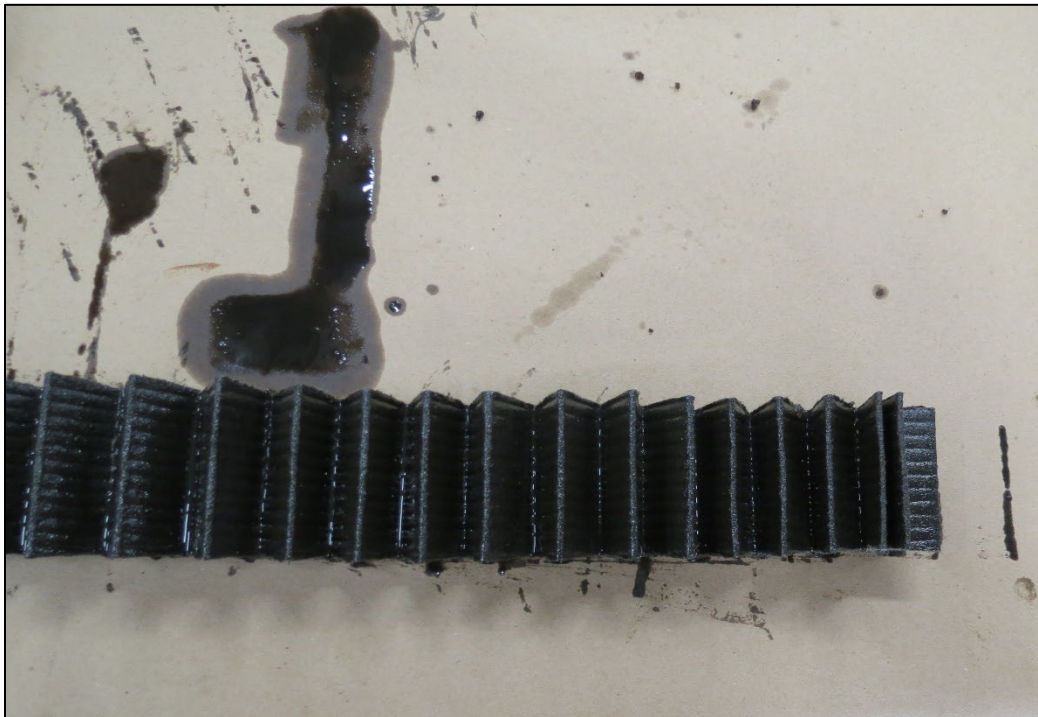


Figure 11: View of the oil filter



Figure 12: View of the right wing



Figure 13: Overview of the top of the engine

YEAR	RECORDING	TODAY'S	TOTAL	Description of Inspections, Tests, Repairs and Alterations
N14FC			AFTT: 3663.5	Tach: 3663.5
01 Jan 2022			PTSO: 778.87	SMOH: 778.87
1. I certify this Airframe has been inspected in accordance with an Annual / 100 Hour inspection Per 14 CFR Appendix D to Part 43 and was determined to be in airworthy condition. All ADs verified through Biweekly 2021-26. 2. C/W ADs 75-12-06, 76-07-12, 77-13-21 (Par B), 94-13-10, 97-01-01 R1, & 12-17-06 (i). 3. Inspected and tested ELT IAW FAR 91.207d (1-4). Due Feb 2022 4. Replace paper induction filter. 5. Replaced main gear bungee P/N:8097. 6. Replace all flex fuel lines firewall forward. (Professional Aviation Associates) 7. Replaced throttle cable with new P/N: 455-185. 8. Rebuild brake master cylinder with MS28775-012, -113, -212 O-Rings. 9. NDT gear side brace studs Job# T367320 (Applied Tech. Services). 10. Install new stall warning light assy. P/N: 472-741. Return to service this date. Daniel Boyle A&P [REDACTED] [REDACTED]				

Figure 14: Maintenance record entry (Annual/ 100-Hour)

Date	Total Time In Service	Since Overhaul	Recording Meter Time	Description of Work Performed Certificate Number & Signature of Technician Performing Work																																				
<i>Balance Forward</i>																																								
The accessories listed are either new or were overhauled (as indicated) and supplied with this engine:																																								
O-540-A1A5																																								
Engine Model																																								
L-799-40	17647-05	8/18/2005																																						
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Figure 15: Maintenance record entry (Overhaul)

Date	Total Time In Service	Since Overhaul	Recording Meter Time	Description of Work Performed Certificate Number & Signature of Technician Performing Work																						
<i>Balance Forward</i>																										
This is to certify that the engine described hereafter has been overhauled to manufacturer's new parts tolerances and limits where applicable by Penn Yan Aero Service, Incorporated. Engine disassembled, cleaned, inspected, repaired, reassembled, and tested in accordance with data approved by and or acceptable to the FAA. All applicable Airworthiness Directives are in compliance. See A.D. list supplied.																										
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Figure 16: Maintenance record entry (Overhaul)

Submitted by:

Adam Gerhardt
Senior Air Safety Investigator