

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN24FA340

EXAMINATION SUMMARY

September 6, 2024

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A. ACCIDENT

Location: Anderson, Indiana
Date: September 6, 2024
Time: 0948 eastern daylight time
Aircraft: Piper PA-46-350P, N629AG

B. EXAMINATION SUMMARY

Investigator-in-Charge (IIC)	Timothy Sorensen ¹² Aviation Accident Investigator National Transportation Safety Board Denver, Colorado
Participant	Laura Abraham ² Air Safety Investigator National Transportation Safety Board Denver, Colorado
Participant	Christopher House ¹² Aviation Safety Inspector Federal Aviation Administration – Flight Standards Indianapolis, Indiana
Party Coordinator	Sean Holloway ¹ Air Safety Investigator Piper Aircraft Vero Beach, Florida
Party Coordinator	David Harsanyi ² Air Safety Investigator Lycoming Engines Williamsport, Pennsylvania

C. ACCIDENT SUMMARY

On September 6, 2024, about 0948 eastern daylight time, a Piper PA-46-350P airplane, N629AG, was destroyed when it was involved in an accident near Anderson, Indiana. The pilot and three pilot-rated passengers were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

¹ Present during the on-scene examination.

² Present during the engine examination.

An on-scene examination was conducted on September 7th by the NTSB with the assistance of the FAA and Piper Aircraft. The wreckage was recovered by AMF Aviation (Springfield, Tennessee) at the conclusion of the exam. An engine examination was conducted on October 10th at AMF Aviation by the NTSB with the assistance of the FAA and Lycoming Engines.

D. EXAMINATION SUMMARY

1.0 Accident Site

The airplane impacted a corn crop and terrain about 1.1 nautical miles southeast (130°) from Anderson Municipal Airport (AID). Approximate coordinates of the accident site were 40.0933 north latitude, 85.5873 west longitude. The elevation was about 923 feet.

The airplane came to rest upright in a corn field. The corn crop was about 8 feet tall. The airframe was fragmented and oriented on an approximate 060° magnetic bearing. A small section of the corn crop exhibited 45° downward cuts immediately adjacent impact crater.

The main impact crater was about 4 feet in diameter and 2 feet deep. Two minor impressions were located about 9 feet southwest of the impact crater and oriented in a direct line with the wreckage distribution. The impressions were about 3 feet by 1 foot by 9 inches deep, and 2 feet by 1 foot by 6 inches deep.

The wreckage debris area was located immediately southwest of the impact crater and extended about 50 feet. The debris was distributed in four general sections which included the forward fuselage and engine, the cockpit, the center fuselage and wing section, and the aft fuselage and empennage.

2.0 Airframe Examination³

Piper PA-46-350P (s/n 4636605)

The airframe was fragmented, and significant portions were consumed by a post-impact fire. The forward fuselage and engine exhibited extensive deformation consistent with impact damage. The upper engine cowling was crushed downward and onto the engine. The firewall and forward pressure bulkhead were deformed and displaced forward.

Portions of the cockpit, including the upper windshield frame, instrument panel fragments, avionics units, and instruments were located about 15 feet from the engine and forward fuselage. The observed instruments and avionics units were

³ Directions related to accident site placement and component damage/deformation are with respect to an intact airframe unless otherwise noted.

damage consistent with impact. The pilot control wheel was not observed and presumed separated and consumed by the post-impact fire. The pilot control shaft was separated from the panel. Aileron cable segments remained connected to the control shaft bellcrank. The co-pilot control wheel remained attached to the control shaft and was damaged. The co-pilot control shaft was separated from the panel. One aileron control cable segment remained attached to the bellcrank. The second cable was separated. The rudder pedal bar was separated from the supporting structure. The right co-pilot rudder pedal was separated and located in the debris path. The remaining rudder pedals remained attached to the bar.

Both wings with portions of the center fuselage were located about 12 feet from the cockpit components. The wings exhibited aft leading edge crushing damage along the entire spans. The wing spar was continuous from the left to right wings. Significant portions of both wings were consumed by the post-impact fire, including both the left and right fuel tanks. The left aileron was separated and located in the debris path. It was deformed consistent with impact forces. The right aileron was partially separated and located in position with the right wing. It was deformed and partially consumed by the post-impact fire. Both wing flaps were partially separated from their respective wings. They were damaged consistent with impact and the post-impact fire. The left and right main landing gear struts were in the extended position. The lower struts with the wheel assemblies were separated and located near the wings.

Aileron control cable continuity was confirmed from the wing roots to the bellcranks. The left aileron bellcrank appeared intact, and the stops remained attached. The right aileron bellcrank was damaged consistent with impact, and both cable terminals and both stops remained attached. The flap control tubes remained connected and attached to the wing. The flap bellcranks were intact, and the control cables remained attached at the bellcranks. The cockpit flap handle was dislocated from the mating structure.

The aft fuselage, including the aft cabin and baggage area, was located adjacent to the wings. The upper portion of the aft fuselage was consumed by the post-impact fire. The lower portion was damaged and partially reduced by the post-impact fire. The aft fuselage exhibited minor buckling damage consistent with the impact forces.

The empennage remained attached to the aft fuselage. The horizontal stabilizer exhibited minor impact-related damage. The left horizontal stabilizer was bent upward about 10° near mid-span. The forward lower section of the vertical stabilizer had buckling damage to the skin where it attached to the fuselage. The vertical stabilizer and rudder appeared otherwise intact.

Elevator and rudder control continuity from the center fuselage area were confirmed visually and by movement of the respective control cables. The elevator trim drum extension measured about 1.2 inches.⁴

3.0 Engine Examination

Lycoming TIO-540-AE2A (s/n L-13994-61A)

The engine came to rest immediately adjacent to the main impact crater. The forward pressure bulkhead and firewall were displaced forward and partially molded to the engine. Similarly, the upper engine cowling was crushed onto the engine. The aft portion of the engine and associated components were damaged consistent with the post-impact fire. The engine intake and exhaust ducting displayed extensive deformation consistent with the impact forces.

The lower portion of the engine crankcase was fractured consistent with impact. The cylinder section of the crankcase appeared intact. The oil pan was crushed upward and fragmented. The cylinders remained secured to the crankcase and exhibited localized damage consistent with impact. The valve covers were deformed. The valve stems, springs, and rocker arms appeared intact. All pushrods were deformed.⁵ Borescope examination of each cylinder was unremarkable with respect to the piston, cylinder walls, and valves. The accessory section was uniformly discolored consistent with the post-impact fire. The accessory gears were intact.

The engine crankshaft was rotated via the propeller hub. Compression and suction were obtained on each cylinder. Access holes were drilled into the top of the crankcase. Borescope examination was unremarkable. The camshaft appeared to be intact, and the camshaft lobes were unremarkable.

The magnetos were separated from the engine and exhibited extensive fire damage. The internal magneto components were destroyed. Both ignition harnesses were destroyed and partially consumed by the fire. The spark plugs appeared to have been securely installed; however, several exhibited mechanical, impact-related damage. The spark plug electrodes available for examination appeared intact and exhibited normal combustion signatures, with exception of one lower plug which was oil fouled.

The fuel injector lines were deformed. The injector nozzles were secure and clear. The flow divider was separated from the mounting bracket but retained by the fuel lines. The housing displayed a gouge but was otherwise intact. The diaphragm was continuous and intact. The spring was intact and appeared functional.

The left and right turbocharger assemblies were dislocated from the installed positions consistent with impact forces. However, both assemblies remained secured

⁴ The airframe manufacturer noted that the observed trim extension equated to slightly nose up.

⁵ The engine pushrods were removed to facilitate the engine exam.

to the intake and exhaust ducting. They also exhibited discoloration due to post-impact fire. The compressor and turbine discs were in contact with the housing and did not rotate. The left and right housings exhibited localized scraping damage, and the left intake disc blades were curled at the tips. The components were not disassembled or examined further.

The oil filter remained attached to the adapter plate; however, the adapter plate was dislocated from the engine. The oil filter housing was dented and deformed. The filter media appeared intact and was clean and free of debris. The engine oil screen was liberated and loose at the accident site. The screen was dented and contained some minor non-metallic debris.

The oil pump housing was secure and intact. It was discolored similar to the accessory section thermal damage previously noted. The impellers and drive shaft were intact. The pump cavity contained two small metallic fragments. The cavity wall exhibited two circumferential score marks; otherwise, the cavity was clean and unremarkable. After disassembly and reassembly, the pump rotated with difficulty under hand pressure.

The engine fuel servo was dislocated from the engine. The assembly was discolored and soot covered consistent with the post-impact fire. The throttle and mixture control arms were bent consistent with impact forces. The cockpit engine control cables were separated. The fuel screen was intact and clear of debris or sediment.

The fuel pump was secured to the engine accessory section housing. The component was discolored and soot covered. The input drive shaft was intact but could not be rotated by hand. The unit not examined further.

The vacuum pump was separated and exhibited thermal damage. The pump vanes were fragmented consistent with impact.

4.0 Propeller Examination

Hartzell HC-13Y1R-1N/N7605CK+2

The propeller hub remained attached to the engine propeller flange. All three propeller blades were separated at the root and positioned around the perimeter of the main impact crater. The hub itself appeared intact. The blade root shafts were bent aft, and portions of the composite blade roots were retained by the hub.

The propeller blades were arbitrarily denoted A, B, and C. Blades A and B appeared intact with exception of splintering at the separated root. The leading and trailing edges appeared undamaged, and blade faces exhibited minor scuffing. Blade C exhibited localized cracking and delamination from leading edge to trailing

edge at about two-thirds span, localized delamination along the trailing edge at about one-third span, and minor scuffing on the blade faces.

The propeller spinner was fragmented. A portion was crushed aft and formed to the hub. The second portion was observed in the debris path and also exhibited aft crushing damage.

----- *end of summary* -----