

NATIONAL TRANSPORTATIONS SAFETY BOARD
Office of Aviation Safety
Washington, DC 20594

SUMMARY OF AIRCRAFT EXAMINATION

-- CEN20LA374 --

A. ACCIDENT

Location: Walker, Minnesota
Date: September 1, 2020
Time: 2007 central daylight time
Aircraft: Piper PA-28-235, N8957W

B. PARTICIPANTS

Edward Martin
Aviation Safety Inspector
Federal Aviation Administration
Minneapolis, Minnesota

Nikolas Halatsis
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Jon Hirsch
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Piper Aircraft
Vero Beach, Florida

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Lycoming Engines
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C. ACCIDENT SUMMARY

On September 1, 2020, about 2007 central daylight time, a Piper PA-28-235 airplane, N8957W, was substantially damaged when it was involved in an accident near Walker, Minnesota. The pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* (CFR) Part 91 personal flight.

Summary of Aircraft Examination

D. DETAILS OF AIRCRAFT EXAMINATION

Post-accident airframe and engine examinations were conducted on October 7, 2020, at Wentworth Aviation (Lakeville, Minnesota). Piper Aircraft and Lycoming Engines provided technical support as parties to the investigation.

E. DESCRIPTION OF ACCIDENT SITE

The airplane came to rest in Leech Lake under about 12 feet of water. Approximate coordinates of the accident site were 47.205601 latitude / -94.42264 longitude.

F. SUMMARY OF AIRCRAFT EXAMINATION¹

Airframe – Piper PA-28-235 (s/n 28-10531)

The fuselage appeared intact. The two forward seats and the aft bench seat remained attached to their respective mounts. The pilot's lap belt remained secured to the mounts and appeared operational.² Shoulder harnesses were not installed. The cabin door was separated from the fuselage.³ The aft baggage door remained attached and latched/locked. The nose landing gear remained attached to the engine mount; however, the lower strut and wheel assembly were displaced aft. The windshield and cabin windows remained intact with exception of the left side forward window.⁴ The recording tachometer indicated 4,733.65 hours at the time of the examination.

The cockpit control wheels appeared intact and moved freely. The forward aileron chain segment was separated at one of the links consistent with overstress. The ends of the chain segment remained attached to the aileron cables in the cockpit. The aileron cables were continuous from the forward cockpit to the wing roots. The aileron cables and balance cable exhibited separations at the wing roots consistent with recovery cuts. Rudder and stabilator flight control cable continuity was established from the cockpit controls to the empennage control surfaces. The cockpit rudder pedals appeared intact.

The cockpit fuel selector handle was in the RIGHT MAIN position and the fuel selector valve was in the corresponding position. Movement of the fuel selector handle produced the corresponding movement of the valve. Both were free to rotate and the valve detents for each position were noticeable. The fuel primer plunger was in the forward and stowed position. The fuel strainer bowl was intact and contained a liquid consistent with lake water when removed. The filter screen was intact and appeared free of debris or sediment.

The left wing was separated from the fuselage at the root. The main spar was fractured consistent with overstress. The aft wing attach fitting exhibited cut marks consistent with recovery operations to remove the wing. The leading edge of the wing outboard of wing station (WS) 49.25 was appeared intact. The portion of the wing inboard of WS 49.25 and forward of the main spar exhibited downward crushing. It was separated from the wing rib at WS 49.25 along the upper surface of the wing. The lower wing skin exhibited deformation and tearing inboard of WS 49.25. The aileron remained attached at the hinges, and aileron control continuity was confirmed to the wing root. The wing flap

¹ Directions related to accident site placement and component damage/deformation are with respect to an intact airframe unless otherwise noted.

² The lap belt buckle was not clasped at the time of the exam.

³ The cabin door was removed by first responders to facilitate access to the cockpit.

⁴ The left side forward window was initially intact at the accident site. It was removed by first responders.

Summary of Aircraft Examination

F. SUMMARY OF AIRCRAFT EXAMINATIONS *(continued)*

remained attached to its hinges. The main landing gear remained attached to the wing.⁵ The pitot mast appeared securely attached and intact. The lift detector remained installed in the leading edge of the wing. The main and wing tip fuel tank fuel filler caps remained intact and were securely installed in the fuel filler neck openings.

The right wing was separated from the fuselage at the root. The main spar was fractured consistent with overstress. The portion of the wing inboard of WS 57 and forward of the main spar was separated.⁶ The leading edge, from WS 57 to the wing tip, exhibited polishing along the span. The upper wing skin exhibited minor deformation along the entire span. The lower wing skin exhibited deformation and tearing between the wing flap and the main wing spar. The aileron remained attached at the hinges, and aileron control continuity was confirmed to the wing root. The wing flap remained attached at the two inboard hinges. The main landing gear remained attached to the wing.⁷ The main and wing tip tank fuel filler caps remained intact and were securely installed in the fuel filler neck openings. The aft third of the tip tank was fractured and was separated from the wing.⁸

The empennage – vertical stabilizer and stabilator – remained intact.⁹ The rudder remained attached at its hinges. The rudder stops were intact and unremarkable. The stabilator remained attached at its hinge. The stabilator stops were intact and unremarkable. The stabilator trim tab remained was secure. The stabilator trim jackscrew was extended about 1.25” above the drum (with ~10 threads exposed).¹⁰

No evidence of a pre-impact airframe anomaly or malfunction was observed.

Engine – Lycoming O-540-B4B5 (s/n L-12757-40)

The engine mount remained secured to the firewall. The engine assembly appeared intact and was secured to the engine mount. Engine control continuity was confirmed. Internal engine and accessory section continuity were confirmed via crankshaft rotation. Compression and suction were obtained on all cylinders. Borescope examination of the engine cylinders revealed the presence of water and corrosion consistent with submersion in the lake. Both magnetos produced spark at all leads when rotated. The spark plugs appeared intact and operational.

The carburetor remained secured to the engine and appeared undamaged. The fuel inlet screen was intact and free of debris or sediment. The engine driven fuel pump provided pressure at the outlet port when operated by hand. A mixture of water and oil was drained from the oil sump. The oil pickup screen was free of debris. The engine exhaust and muffler appeared intact. Visual examination did not reveal any evidence that they were compromised.

⁵ Damage to the gear strut scissor link occurred during the recovery process.

⁶ The portion of the wing structure inboard of WS57 and forward of the main spar was not with the wreckage and presumed not to have been recovered.

⁷ Damage to the gear strut scissor link occurred during the recovery process.

⁸ The aft one-third of the wing tip fuel tank was not with the wreckage and presumed not to have been recovered.

⁹ The stabilator tips removed after the accident to facilitate recovery of the airframe.

¹⁰ According to the airframe manufacturer, this corresponded to a “partial” nose up trim setting.

Summary of Aircraft Examination

F. SUMMARY OF AIRCRAFT EXAMINATIONS *(continued)*

The propeller remained attached to the crankshaft propeller flange. Both blades were bent slightly aft but appeared otherwise intact. The propeller mounting bolts were secure with safety wire installed. The propeller exhibited polishing along one side of the propeller which included the leading edge of one blade and the trailing edge of the other blade. One blade had a slight aft bend at the outer 12" of the blade.

No evidence of a pre-impact engine anomaly or malfunction was observed.

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