



National Transportation Safety Board

Office of Aviation Safety Central Region

Accident Site and Wreckage Examination Summary

NTSB Accident No: CEN19FA247
Accident Date/Time: Saturday, 3 August 2019, at 1143 EDT
Accident Location: Ontonagon, Michigan
46°41'56.64"N
89°28'21.60"W
1,478 ft mean sea level

Aircraft Make/Model: Piper PA-28-180
Aircraft Registration: N5167L
Aircraft Serial No: 28-4453
Engine Make/Model: Lycoming O-360-A4A
Engine Serial No: RL-41681-36E
Propeller Make/Model: Sensenich 76EM8S50-60
Propeller Serial No: 100867K
Airworthiness Date: 16 November 1967
Airplane Time: 7518.1 hours since new, including the 0.5-hour accident flight
Engine Time: 9.7 hours since it was remanufactured at factory
Propeller Time: 868.3 hours since overhaul

Airplane Operator: Mark J. Maccani
Jack J. Maccani
Bessemer, Michigan, 49911

Airplane Owner: Mark J. Maccani
Jack J. Maccani
Bessemer, Michigan, 49911

Examination Dates/Locations: August 5, 2019 (Ontonagon, MI, Accident Site)

Participants: Andrew T. Fox - National Transportation Safety Board
Matthew Livingstone - Federal Aviation Administration
Michael Matthews - Federal Aviation Administration
Kathryn Whitaker - Piper Aircraft
Troy Helgeson - Lycoming Engines

SUMMARY

An onsite examination of the airplane, engine, and propeller was completed by a National Transportation Safety Board (NTSB) investigator who was assisted by representatives from the Federal Aviation Administration, Piper Aircraft, and Lycoming Engines.

The postaccident examination revealed no evidence of a mechanical malfunction or failure that would have precluded normal operation of the airplane before it collided with trees and terrain.

AIRPLANE CONFIGURATION AND MAINTENANCE

The airplane, a Piper PA-28-180, serial number 28-4453, was manufactured in 1967. The low-wing airplane was of conventional aluminum construction. The airplane was powered by a 180-horsepower, 4-cylinder, Lycoming O-360-A4A reciprocating engine, serial number RL-41681-36E. The engine provided thrust through a fixed-pitch, two-blade, Sensenich 76EM8S50-60 propeller, serial number 100867K. The four-seat airplane was equipped with a fixed-landing gear. The airplane had a maximum allowable takeoff weight of 2,400 pounds. On November 16, 1967, the airplane was issued a standard airworthiness certificate. The current owners purchased the airplane on April 22, 2017.

According to maintenance documentation, the last annual inspection was completed on July 14, 2019, at 7,508.4 total airframe hours. The airplane had accumulated 9.7 hours since the annual inspection, including the 0.5-hour accident flight. The airplane had total service time of 7,518.1 hours. The factory remanufactured engine had accumulated 9.7 hours since it was installed on the airplane during the last annual inspection.

A postaccident review of the available maintenance records found no history of unresolved airworthiness issues.

ACCIDENT SITE

The accident site was in a heavily forested area. A 140 ft long wreckage debris path preceded the main wreckage on a west heading. The entire airplane fragmented during the impact with trees and terrain. The wreckage debris path began with broken tree limbs. There were numerous broken tree branches located along the debris path. The debris path also included wing skins, left aileron, both wing tips, and the engine cowl. The empennage, fuselage, and right wing structure were found grouped together. The engine was found inverted between the fuselage and the right wing. The left wing was found beyond the fuselage and engine.

MAIN WRECKAGE

All airframe structural components and flight control surfaces were located along the wreckage debris path or amongst the main wreckage. All observed structural component separations were consistent with overstress and there was no evidence of an inflight or postimpact fire.

The fuselage was extensively fragmented and deformed during impact. The cabin roof separated from the remainder of the fuselage structure and the windows were shattered. The cabin floor exhibited buckling and was fractured. The main wing spar carry through box separated from the cabin floor structure during impact. The main wing spar caps were separated through the webs. The firewall was fragmented and deformed, and the engine mount was broken in multiple pieces. The engine separated from the fuselage and was found between the fuselage and the right wing.

The instrument panel was fragmented and deformed, and most of the instruments were damaged during impact. The engine controls were damaged and their preimpact positions could not be determined. The carburetor heat lever was in the OFF position, and the primer pump was stowed and latched. The battery master, alternator, pitot heat, landing light, and beacon light switches were damaged during impact, but appeared to be all switched ON.

The flight control tee-bar was fractured. Both control yokes and their shafts separated during impact. Flight control cable continuity could not be established due to impact damage; however, all observed separations were consistent with overstress or had been cut by first responders. The flap torque tube position was consistent with the wing flaps were fully retracted at impact.

The entire left wing separated from the fuselage during impact. The left wing was found about 10 ft northwest of the fuselage. The outboard wing section exhibited a circular crush impression in the leading edge with imbedded wood, consistent with a tree impact. The left wingtip was found near the beginning of the wreckage debris path. The left aileron separated from the wing during impact and was found near the beginning of the debris path. The left aileron exhibited impact related damage. The left flap remained attached to the wing and exhibited buckling damage. The left main landing gear separated from the wing structure but remained attached through the brake line.

The right wing separated from the fuselage during impact. The right wing was found lying beside the cabin roof. The leading edge was crushed aft to the main wing spar. The right wingtip was found near the beginning of the wreckage debris path. The flap remained attached to the wing and exhibited buckling damage. The right aileron had separated from the wing and exhibited impact related damage. The right landing gear remained attached to the wing structure.

Both fuel tanks had ruptured during impact; however, uncontaminated 100-low lead aviation fuel was observed in the fuel selector, electric fuel pump, and carburetor bowl. The fuel selector valve was positioned to use fuel from the left tank, and a functional test of the fuel shutoff valve did not reveal any anomalies. The firewall mounted gascolator separated during impact.

The empennage separated from the fuselage during impact. According to first responders, the empennage was found on top of the fuselage cabin and was cut away from the fuselage to facilitate the body removal. The vertical stabilizer leading edge exhibited a large semi-circular crush impression. The rudder remained attached to the vertical stabilizer and exhibited impact related damage. The rudder control stops appeared undamaged. The leading edge of the stabilator exhibited impact related damage. The stabilator control stops appeared undamaged.

The stabilator pitch trim barrel exhibited about 7 threads, 0.75" extension, consistent with a neutral pitch trim position.

ENGINE

The engine had partially separated from the firewall and remained attached by cables and fuel lines. Internal engine and valve train continuity were confirmed as the crankshaft was rotated through the vacuum pump accessory drive gear. Compression and suction were noted on all four cylinders in conjunction with crankshaft rotation. The upper spark plugs were removed and exhibited features consistent with normal engine operation. A borescope inspection of each cylinder did not reveal any anomalies with the cylinders, pistons, valves, valve seats, or lower spark plugs. The right magneto remained attached to its installation point and provided spark on all posts when removed and rotated by hand. The left magneto was destroyed during impact. The oil pickup screen was free of metallic material. The carburetor had separated from the engine during impact. The carburetor bowl contained about 2 fluid ounces of fuel, and there was no evidence of water or particulate contamination. Disassembly of the carburetor did not reveal any anomalies with the single-piece venturi, accelerator pump, metal floats, or needle valve. The vacuum pump remained attached to the engine and functioned normally when removed and rotated by hand.

PROPELLER

The propeller had separated from crankshaft during impact. The propeller blades exhibited chordwise scratches and burnishing, S-shape spanwise bends, blade twist toward low-pitch, and minor leading edge damage.