

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR24LA039

AIRFRAME & ENGINE EXAMINATION SUMMARY

April 18, 2024

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A. ACCIDENT

Location: Woodland, Washington
Date: 11/18/2023
Time: 1522 Pacific standard time
Airplane: N6266K Cessna 150M

B. AIRFRAME & ENGINE EXAMINATION SUMMARY

IIC Eleazar Nepomuceno
National Transportation Safety Board
Federal Way, Washington

C. SUMMARY

On November 18, 2023, about 1522 Pacific standard time (PST), a Cessna 150M, N6266K, was substantially damaged when it was involved in an accident near Woodland, Washington. The flight instructor and student pilot sustained no injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

The flight instructor reported that about 1425 PST, they departed from Pearson Field Airport (VUO), Vancouver, Washington to practice steep-turns and slow flight maneuvers, to include an introduction to power-off stalls and recovery. At about 3,500 ft mean sea level (msl), the instructor executed an additional stall maneuver, and as the instructor released the back pressure on the yoke and advanced the throttle setting to full to recover from the maneuver, the airplane's power setting remained idle. The instructor subsequently increased the throttle setting incrementally after decreasing it to increase engine power. As the engine power remained unchanged, the instructor made the decision to execute an emergency landing. The instructor maneuvered the airplane to a nearby field and shortly after touchdown, the nose landing gear separated, and the airplane nosed over. The airplane sustained substantial damage to the aft fuselage.

The airplane and engine were recovered to a secure facility for further examination. The examination took place on April 17-18, 2024. Examination of the airplane and engine revealed no mechanical anomalies that would have precluded normal operation.

D. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

1.1 Fuselage

The tailcone was separated from the fuselage during recovery. Damage sustained was consistent to impact with terrain during a nose-over landing.

1.2 Empennage

Both left and right horizontal stabilizers and elevators remained secured to its mounting point. The rudder remained attached with compression damage to its upper section, consistent with a nose-over. The control cables were cut during the recovery. Control continuity was confirmed from the flight control surfaces to the cockpit controls.



1.3 Wings

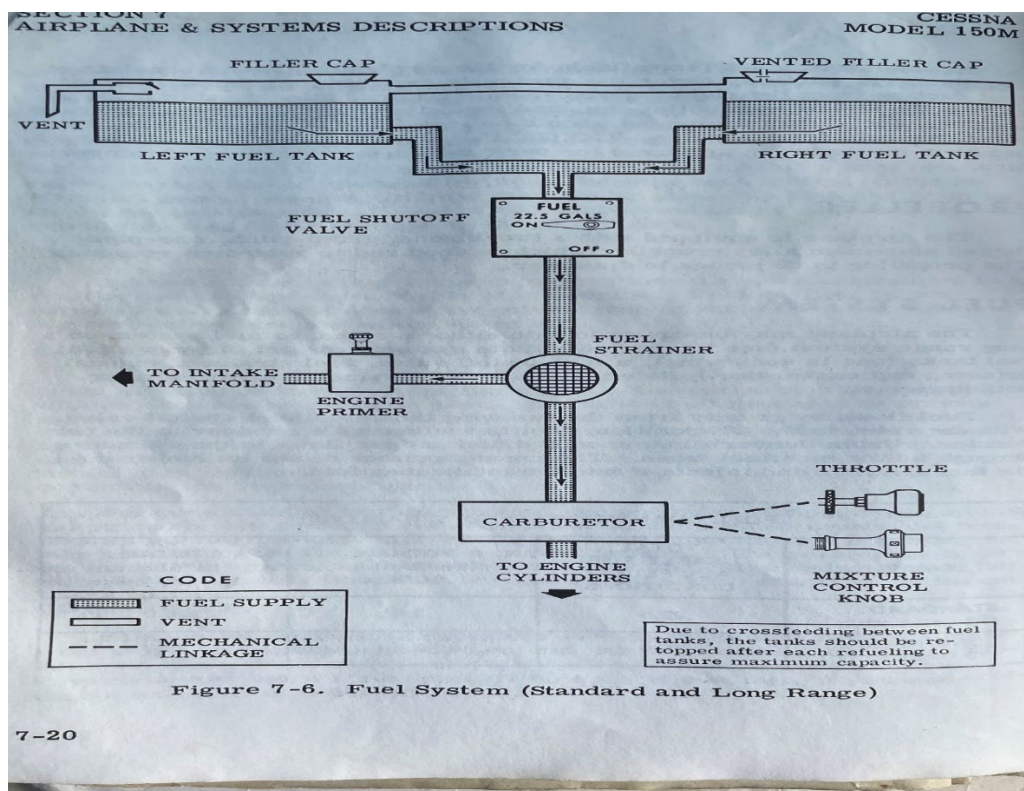
Both wings were separated during recovery. The left wing sustained outboard leading-edge mamage. The right wing sustained damage near the wing tip. Flight control continuity was established from the cockpit controls to its respective flight control surface.

1.4 Landing Gear

The nose gear was separated. The left and right main landing gears remained attached to the fuselage.

1.5 Fuel/Fuel System

The airplane was equipped with two vented fuel tanks, a fuel shut off valve, fuel strained, manual primer, and carburetor. Fuel flow continuity was confirmed from each wing tank to the engine using compressed air. The fuel shutoff valve in the cockpit was found in the open position. The fuel filter bowl remained secured to its mount. Its removal revealed that the bowl had about 2 oz of fuel consistent with 100LL avgas; the filter was free of debris. The manual primer remained secured. The recovery company reported that they did not recover any fuel from the airplane.



2.0 Engine Examination

The airplane was equipped with a Continental O-200, serial no. 66799-7-A, a horizontally opposed, four cylinder, overhead-valve, air-cooled, carbureted engine with a wet sump system. The vacuum pump, alternator, started and dual magnetos remained secured and was found unremarkable. The oil case remained secured but sustained minor damage consistent with impact. The carburetor was separated from the intake manifold tubes, consistent with impact damage. Examination of the carburetor revealed no anomalies.

Examination of the recovered engine revealed that the engine remained attached to the airframe via the engine mounts. All four cylinders and all engine accessories remained attached. All fuel and oil lines that were removed were tight. No evidence of any mechanical damage was observed to the engine crankcase. The rocker box covers were removed. The intake and exhaust rocker arms were intact, and oil coated residue was seen in all cylinders. All intake and exhaust valve springs were in place and visually appeared to be undamaged. The upper spark plugs were removed, and all cylinders were examined internally using a lighted borescope. A normal amount of combustion deposits was observed within the combustion dome of each cylinder and piston face. All the intake and exhaust valves were unremarkable. The crankshaft was rotated by hand using the propeller. Rotational continuity was established throughout the engine and valve train. Thumb compression and suction were obtained on all cylinders.

3.0 Propeller Examination

The airplane was equipped with a 2-bladed, fixed pitched propeller. Both blades remained secured in its respective hub. Blade A and B has slight aft bending from the blade tip to about 4 inches inboard, consistent with a low to no power event.

4.0 Flight Instructor Interview Summary

The flight instructor reported that the preflight was conducted at approximately 1:30pm PST, with the tanks being dipped around that time as well. Sidney reported the fuel amount around 2:00pm PST. The two brothers do the preflight together, as well as ground school. When their father enrolled them in flight training, he asked us if we would allow them to do as much of the ground training together as possible, as he believed this would be beneficial to both students and provide them with a more conducive learning environment. We approved his request, and they have been training together from the beginning. As far as the preflight procedure is concerned, this allowed them to acquire twice the experience as our other students.

She added that part of our training program consists in teaching our students to do the preflight. They do it with an instructor a few times, until they show proficiency in doing it independently. Once they demonstrate that they're capable of

performing the procedure without their instructor, it becomes their responsibility to preflight the aircraft and report fuel quantity and any discrepancies they may find to their instructor. A preflight checklist is provided to them and they're required to refer to it while performing the preflight. I was not present when the preflight was performed on November 18th.

The student reported he dipped the fuel tanks twice that day, and they read 13 gallons in one wing and 9 gallons on the other (1/2 fuel level for each of the gauges). The fuel quantity is verified by dipping a dipstick straight into each tank and reading the amount off the ruler.

Company policy did not require the instructors to dip the tanks after our students do. It's the responsibility of the instructors to decide whether the fuel amount reported by our students is sufficient for the planned lesson. Based on the quantity the student reported to me that day, the instructor deemed that the amount the tanks were carrying was sufficient to cover our flight that day, leaving us with plenty of fuel reserves in case we experienced an unexpected change in our plans.

When the instructor completed the fuel calculations, they used 6 gallons an hour as our base. Unusable fuel is 3.5 gallons, so 22 gallons of fuel would've allowed the instructor and student to fly for 3.08 hours. At Aero Maintenance, it's also mandatory that they departed with enough fuel to complete the flight, plus 45 minutes of reserve, which would allow us to fly no longer than 2.33 hours that day. They calculated had about 1.3 hours of flight time available for our lesson, since it was scheduled to end around 3:30pm. The 22 gallons of fuel that the student reported we had, would've given them an extra hour, plus 45 minutes of flight time.

The instructor was not sure exactly how long we had been flying for before we had the engine problem, but believed it was around 0.9 hours. This means the airplane would've burned about 5.5 gallons of fuel at that point. We were at about 3,500 feet AGL when the engine stopped responding. The throttle moved as I pushed it in and pulled out, but the propeller would stay in the idle position.

The instructor turned towards W27 immediately upon realizing the unexpected change. At that point, the airplane may have lost about 200 feet. He then pitched for best glide, which is 65 knots for their C150s. She added that it was impossible for me to say exactly what the airspeed was once I turned toward the field; however, she felt it safe to assume that it varied, as she was trying to judge the airplane's height above the ground, and how much distance it had to travel before reaching her desired field. Flaps weren't added until the instructor was certain that they were clear of the railroad tracks they had to cross. The engine momentarily regained power during final approach, but returned to idle after about 3 seconds.

The first responders arrived 7 minutes after I made the 911 call, which happened within seconds after we evacuated the aircraft.

The instructor did not notice any fuel smell or leakage from the wings after we evacuated. The wings were damaged from the impact; however, she was not able to confirm whether any fuel leaked from them. It's worth noting that we got a significant amount of rain shortly after the accident, which would've made it difficult to notice any leakage from the fuel tanks.

As a result of the accident, the operator developed a new procedure that required flight instructors to check and sign off on the fuel levels after each preflight. They also reiterated that each airplane should be a level as possible and that the fuel dipstick is at a 90° angle to the top of the tank when verifying fuel levels.

Submitted by:

Eleazar Nepomuceno
Aviation Accident Investigator