

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR22LA060

POST ACCIDENT EXAMINATION

January 26, 2022

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A. ACCIDENT

Location: Hillsboro, Oregon
Date: December 19, 2021
Time: 1545 Pacific Standard Time
Airplane: N152BT, Cessna P210

B. POST ACCIDENT EXAMINATION

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C. SUMMARY

On December 9, 2021, about 1630 pacific standard time, a Cessna P210N Centurion, N152BT, was substantially damaged when it was involved in an accident near Hillsboro, Oregon. The pilot sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations Part 91* personal flight.

The pilot reported that the airplane had just been returned to service following its annual inspection when the accident occurred. He departed and turned northbound towards his destination airport, which was about 7 nm away. The pilot started to maneuver the airplane for an extended left base leg at an altitude of 1,200 ft above ground level (agl) after being cleared by the air traffic controller at his destination airport, which was now 6 nm away. The pilot stated that the airplane "struggled" during the climb and about 1,100 ft agl, the airplane began to lose altitude. He decided that the airplane would not reach the runway and turned back towards the departure airport for a precautionary landing. During this time, he verified that his magnetos, fuel, mixture, propeller, and throttle settings were in their correct positions. Shortly after, he saw spikes in the exhaust gas temperature (EGT) of three cylinders and adjusted the mixture to try to cool the cylinders, but the EGTs remained in the red arc. The pilot then landed the airplane in an orchard and the airplane came to rest upright in between trees. The horizontal stabilizer was substantial damaged.

The airplane and engine were recovered and stored at Twin Oaks Aircraft Maintenance, LLC. A postaccident examination of the airplane took place on January 26, 2022. It did not reveal any preimpact mechanical anomalies or malfunctions that would have precluded normal operation. The engine revealed that the right hand magneto was inoperable due to corrosion.

D. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

Examination of the airframe revealed that the left and right horizontal were substantially damaged. Flight control continuity was established throughout the airframe to all primary flight controls.



Figure 1. View of damage to left and right horizontal stabilizer.

2.0 Engine Examination

Examination of the recovered wreckage was conducted on January 26, 2022, at the facilities of Twin Oaks Maintenance LLC. The engine and propellers remained intact with no signs of visible impact damage. The engine stayed secure in the engine compartment throughout the examination.

Engine – Continental TSIO-520-P (8), s/n 278895-R; TSOH:1387.6



Figure 2. View of engine prior to engine run

The engine and all its accessories were intact. A ground run was completed and during the ground run and the magneto checks revealed the following:

- When the "R" (right) magneto was selected on the ignition, the engine continued to run; the engine was limited to about 30 inches of manifold pressure and about 2500-2600 rpms.
- When the "L" (left) magneto was selected, the engine immediately changed in sound, consistent with the engine winding and shutting down.
- When the "BOTH" setting was selected, the engine continued to run; the engine was limited about 22 inches of manifold pressure and about 2200 rpms.
- When the "OFF" was selected, the engine immediately changed in sound, consistent with the engine winding and shutting down.

The ground run revealed no further anomalies.

The top spark plugs were removed, and the crankshaft was rotated using the propeller. Rotational continuity was established throughout the engine and valve train. Compression/suction was obtained on all 6 cylinders: no.1-74/70, no.2-60/70, no 3.- 64/70, no 4.- 56/70, no 5.- 67/70, no 6.- 68/70. Minor leaks were noticed where the push rod housing mates with cylinder head.

Ignition wire harness from the right and left magneto distributor caps were followed and revealed that all leads were routed to the appropriate spark plug. However, the wires from the magneto to the ignition block revealed that the left magneto was set to the RIGHT switch terminal and the right magneto was set to the LEFT switch terminal. Bottom ignition lead springs mating with bottom spark plugs for no. 2, no. 4, and no. 6 revealed signs of corrosion.

Engine to magneto timing checks revealed that the right magneto was set to 22° and the left magneto to 21.5°, which was within limits per manufacturer's guidance (timing to be set to 22 +0/-2 BTDC). Examination of the wiring configuration from the ignition (inside the cockpit) to each magneto P-lead revealed that the "L" magneto wiring in the cockpit is attached to the right magneto while the "R" magneto wiring is attached to the left magneto.

Further examination of the right Slick magneto model no. 6320, SN: 0181738 revealed corrosion and a burning smell within the electrode.



Figure 3. View of internal components of right magneto

Further examination of the left Slick magneto model no. 6320, SN:8050835 revealed the internal components were unremarkable.



Figure 4. View of internal components of left magneto

Both magnetos were retained for further examination.

All spark plugs were bench tested for quality of sparks and resistance. All spark plugs were found operational except the bottom spark plug for cylinder no.6, which did not pass the resistance test.

All cylinders were examined internally with a lighted borescope. All piston heads remained intact with signs of carbon buildup consistent with normal operation; #2 cylinder revealed some corrosion. The cylinder walls revealed minor scoring on the walls. The intake and piston valves were all intact with carbon buildup on its head, consistent with normal operation.

The oil filter was removed and cut open. The internal filter element was found unremarkable.

The air filter was removed and found dirty.

The fuel pump was turned ON and each of the 6 fuel nozzles displaced fuel without restriction; the fuel collected in 6 separate receptacles were clear and free of debris; all fuel levels were similar in amount. The fuel flow divider cap was removed and revealed the fuel filter screen unremarkable, free of any debris.

3.0 Propeller Examination

The spinner, propellor, and blades were unremarkable.

Submitted by:

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