

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR24LA046

WRECKAGE EXAMINATION SUMMARY REPORT

Factual Report

April 2, 2024

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A. ACCIDENT

Location: Big Bear City, California
Date: December 2, 2023
Time: 1400 Pacific Standard Time
Airplane: Cessna P-210N

B. PARTICIPANTS

IIC	Andrew Swick NTSB AS-WPR Phoenix, Arizona
Air Safety Investigator	Tony Hershberger Textron Aviation Wichita, Kansas
Senior Air Safety Investigator	Jack Johnson Rolls-Royce Indianapolis, Indiana
Service and Controls Engineer	Thomas J. Ronan Rolls-Royce Indianapolis, Indiana

C. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

The airplane was located in a hangar for the examination. The wings, vertical and horizontal stabs, rudder, elevators and flaps were removed and displayed on the ground for the examination. The landing gear was found in the retracted position and the selector handle was positioned in the retracted position. The fuselage and engine were positioned on a rolling pallet. The upper cowling was removed and there was impact damage to the lower cowling and fuselage. The nose landing gear separated, and a section of the oleo and linkage remained attached. The main landing gear was in the retracted position. The left wheel assembly separated from the axel attachment point. The propeller gear box and the propeller assembly separated from the engine. Three of the propeller blades separated near the hub. The two other propeller blades separated about 10 inches from the hub. The two blades appeared to be in a feathered blade position. Four of the blade sections were found with the wreckage.

Two of the blades showing leading edge damage were broken at the root. It was later known that the pilot had retained one of the separated propeller blade sections from the accident site.



Figure 1-Follow-up examination, main wreckage.

Both fuselage aux tank sumps were drained and the fuel was clear of contaminants. The fuselage aux tank vent was unobstructed.

The left tip tank separated from the wing. The left tip tank vent line separated from the tank and was unobstructed. The right tip tank was intact and the vent was unobstructed. The wing main fuel tanks vents were unobstructed. The vented fuel tank caps (4) were examined and were unremarkable. The fuselage aux tank unvented cap and was unremarkable. The cap gaskets were unremarkable.

Aileron flight control continuity was established on both wings. Flap cable continuity was established and the flap push rods were intact. The flap actuator was found near zero degrees. Elevator trim was undetermined. Elevator and rudder cable continuity was established.



Figure 2-Left wing.



Figure 3-Right wing.

Fuel selector operation to the engine was established in both "LEFT" and "RIGHT" and "BOTH" positions. There was no "OFF" position on the fuel selector valve. The fuel shut off valve worked normally. The airframe mounted fuel filter was disassembled, and the screen and bowl were clean. Fuel was noted in the filter assembly.

2.0 Engine Examination

The engine remained attached to the airframe and the propeller and gear box separated. The engine and cradle assembly was bent downward. The right exhaust pipe was crushed upwards. The left exhaust assembly was crushed upwards. The rear side of the outer combustion case was crushed by the engine mount cross bar.

The coordinator power input lever from the cabin shows and indication of 3-degrees, maximum reverse thrust, consistent with power lever position in the cabin. Continuity was established between the power lever and the coordinator power lever input linkage. Continuity from the coordinator to the beta control rod was established. Continuity between the coordinator and the fuel control throttle input lever was also established. Input and output for the condition lever continuity was also established. Both the power lever and condition lever had restricted movement. The power lever in the cabin was bent to one side. The power lever cable continuity was established but had limited movement due to impact damage.

The propeller housing was fractured exposing the planetary gear set and internal surfaces. The interior surfaces were covered with oil and dirt.



Figure 4-Engine assembly and forward fuselage.



Figure 5-Propeller and gearbox assemblies.

The propeller gear box oil sump was undamaged. The propeller gear box oil sump chip detector was removed and was clear of contaminants. The gearbox lower chip detector was removed and was clear of contaminants. The gearbox upper chip detector was removed and was clear of contaminants.

The engine oil filter was removed and disassembled. Fine metal particles were found in the bottom of the bowl. The oil filter was free of debris. The oil was a light brown color.

The fuel spray delivery line was removed and about a teaspoon of fuel was obtained. The water detection past was used, and no water was detected. The fuel was clear and no contaminants were visible. The fuel spray nozzle was removed and exhibited normal carbon coating of the spray face.

The engine mounted fuel filter was removed and was clear of contaminants.

Engine bleed valve was cycled manually and no anomalies noted. It operated smoothly and no radial play was found in the poppet valve.

The oil reservoir dip stick was removed and indicated about 6 quarts of oil.

The lighted boroscope inspection of the combustion chamber revealed no evidence of streaking or abnormal combustion. Silver metallic spray was present throughout the combustion chamber consistent with engine operation at the time of the accident sequence. There was no thermal degradation of the first stage nozzle or blades. The compressor section was inspected by boroscope to the greatest extent possible; the first and second stage stators and blades and third stage stator blades exhibited normal operating signatures.

N1 drive train continuity was established from the compressor section to the starter generator motor. The fuel pump cover plate was removed, and fuel was present in the pump. Gear train continuity was established from the N1 to the fuel pump pumping gears.

The power turbine was rotated by hand and continuity was established to the power output shaft. The 4th stage power turbine blades were visible and undamaged.

There was no evidence of operational failure of the engine nor any condition that would have prevented normal operation prior to impact.

3.0 Maintenance Records

The maintenance records revealed that the last 100-hour inspection was performed August 18, 2023, by PropJet Aviation, in Windsor, California. At that time the maintenance the total time on the airframe read 5,545.4 hours, the engine total time since new read 1,679.0 hours and the propeller was installed new 525.0 hours prior to the inspection.

August 18, 2023-

Removed engine January 30, 2023, and sublet to HEROS. Metal in oil and 1,750 HMI inspection. Reinstalled engine to airframe, test run and check all rigging and operations, check bleed valve operation.

Performed engine service to 100-hour inspection... Inspected for 300-hour inspection.

At the time of the accident the tachometer read 5,470 hours, about 25 hours since last inspection.

Submitted by:

Andrew Swick
Aviation Accident Investigator