

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR23LA215

AIRFRAME & ENGINE EXAMINATION

September 7, 2023

A. ACCIDENT

Location: Belfair, Washington
Date: June 04, 2023
Time: 1130 Pacific daylight time
Airplane: N77583, Piper J3C-65

B. AIRFRAME & ENGINE EXAMINATION

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C. SUMMARY

Examination of the recovered wreckage was conducted on September 7, 2023, in Port Orchard, Washington. Postaccident examination of the recovered wreckage revealed that the crankshaft gear was fractured into multiple sections.

D. DETAILS OF THE INVESTIGATION

1.0 Airframe examination

Examination of the recovered wreckage revealed that the forward fuselage was crushed upward and aft along with various dents and impact damage to the boot cowl. The aft fuselage and empennage were not damaged. Both wings had been removed to facilitate recovery of the wreckage.

The frame of the upper half of the cabin door remained attached at its hinges. The lower half of the cabin door was not observed. The cabin seats remained installed. The forward seat back was displaced to the left. Lap belt restraints were observed. The forward cabin floor was buckled upward.

Cockpit Documentation:
Primer: In and locked
Throttle: Intermediate position
Mixture: In/Rich
Carburetor Heat: Out/On
Magnetos Switch: Off

2.0 Engine Examination

Engine Manufacturer: Continental

Engine Model Number: C-90F

Engine Serial Number: 42598-0-8

The engine remained attached to the airframe via the engine mount. The upper engine cowling remained attached and exhibited crush damage. The lower engine cowling remained attached and was crushed upward and aft. The eyebrows remained attached and were undamaged.

All 4 cylinders remained attached to the crankcase and appeared undamaged. All engine accessories remained attached to the engine. The fuel inlet line from the airframe fuel filter to the carburetor remained connected.

The carburetor mount flange was fractured just above the throttle valve. The throttle and mixture cables remained attached to their respective control arms at the carburetor. The carburetor heat cable remained attached to the airbox control arm.

All intake tubes remained attached and undamaged, with the rubber interconnect hoses intact and secure. The exhaust header and muffler remained attached and had some impact damage. The oil sump remained attached to the crankcase, however, was crushed upward and aft and was punctured. The oil filler neck was pushed upward and against cylinder #1.

The engine was removed from the airframe and mounted to a test stand. A replacement propeller, oil sump, intake manifold assembly and airbox were installed due to impact damage. The lower spark plugs were removed. The #1 spark plug was filled with oil; all others exhibited a light grey color within the electrode area. When the propeller was rotated by hand, neither magneto impulse coupling functioned. The right magneto was removed. Remnants of the crankshaft gear were observed within the accessory case. The engine was removed from the test stand and subsequently disassembled. The crankshaft gear was fractured into multiple sections. Remnants of the crankshaft gear bolts and safety wire were located within the accessory case. Remains of two crankshaft gear bolts remained within the crankshaft. The crankshaft gear, bolt remains, and crankshaft were retained for further examination.

3.0 Propeller

The two bladed wooden propeller remained attached to the crankshaft flange via its bolts and safety wire. One blade remained undamaged, and one blade was splintered just outboard of the hub.

Submitted by:

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