

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR22FA298

ACCIDENT SITE, AIRFRAME, AND ENGINES EXAMINATION

May 4, 2023

A. ACCIDENT

Location: Blyn, Washington
Date: August 10, 2022
Time: 1458 Pacific daylight time
Airplane: N379DH, Cirrus SR22

B. ACCIDENT SITE, AIRFRAME, AND ENGINES EXAMINATION

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C. DETAILS OF THE EXAMINATION

1.0 Accident Site

Examination of the accident site revealed that the airplane impacted a heavily wooded area. The first identified point of contact was a freshly topped tree, with composite material fragments located near the tree root. The debris path initially extended along an approximate 270° heading, for about 300 ft, before shifting to an approximate 312° heading, which extended for about 155 ft. All major structural components of the airplane were located within the debris path. Throughout the debris path, numerous topped trees, 70 to 80 ft in height were topped. One tree, located adjacent to the fuselage, was stripped of its bark along the eastern side of the tree from about 5 ft above the ground, to the area it was topped.

The fuselage came to rest inverted on a heading of about 301°. The forward part of the fuselage was fractured in half just aft of the lower part of the windshield. The upper cabin roof was separated and located throughout the debris path. The CAPS handle was found extended, with no securing pin on the separated part of cabin roof structure. The parachute remained stowed within its deployment bag. The CAPS rocket was found secure to its cables, separated from the airframe, and was partially wrapped around the tree with stripped bark. The rocket was not expended.

The empennage was impact damaged and found upside down. The vertical and horizontal stabilizers were intact and impact damaged, however, the right elevator and rudder were separated, while the left elevator remained partially attached.

The right wing structure was impact damaged and fragmented, however, the spar remained attached to the fuselage structure, and exhibited impact damage. The left wing structure was separated from the wing spar structure, and located within the debris path.

The engine was separated from the engine mount and found inverted within the wreckage debris path. The propeller remained attached to the propeller flange. Impact damage was observed to various cylinders and oil sump. The alternator was located within the debris path between the fuselage and engine.

The wreckage was recovered to AvTech Services, Auburn, WA, for further examination.

2.0 Recovered Airframe Examination

The left aileron remained attached to the wing and exhibited impact damage. The left flap was separated from the wing and exhibited impact damage. The right aileron was separated from the wing and exhibited impact damage. The right flap remained attached to the wing at the inboard and mid-hinges.

Components of the aileron control system that were visually examined and no anomalies were noted.

The horizontal stabilizer separated from the empennage. The left elevator remained attached and exhibited impact damage. The right elevator separated from the stabilizer and exhibited impact damage. The elevator cables remained attached at the bellcrank weldment in the instrument console and at the fuselage station (FS) 306 bulkhead bellcranks. The cables were cut to facilitate transport of the wreckage.

The rudder control cables remained attached to the rudder pedal stanchions and at the FS306 bulkhead bellcranks.

The pitch trim motor was in an approximately neutral position.

Instrument Panel Documentation:

Ignition Switch: Off (no key)
Bat 1&2: On
Alt 1&2: On
Avionics: On
Landing Light: On
Ice Protection: Off - Norm/max: Norm
Nav Lights: Off

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Strobe: Off
Fuel Selector: Left tank
Throttle: $\frac{3}{4}$ Forward
Mixture: $\frac{3}{4}$ Forward
Electric Boost Pump: Off
Flap Switch: 50%
HOBBS: 2764.0
Standby Airspeed: 0
Standby Altimeter: 30.00 inches - 8,010 ft
Alternate Engine Induction Air: Knob out - $\frac{1}{4}$ inch

3.0 Recovered Engine Examination

The engine was separated from the airframe. Both magnetos, standby alternator, and starter were separated from the engine. The upper area of the crankcase was cracked, which spanned between the number 5 and 6 cylinders. The 2, 4, and 6 cylinder fuel injectors were pulled away from their respective cylinder. The no. 6 cylinder exhibited impact damage to the cylinder head. The induction rocker arm and housing were separated. The upper spark plugs, rocker box covers, and fuel pump were removed. The crankshaft would not rotate by hand. All 6 cylinders were examined internally using a lighted borescope. All 6 cylinders exhibited varying degrees of corrosion. The intake and exhaust valves on cylinders 1, 2, 3, 5, and 6 were unremarkable. The valves on cylinder no. 4 could not be examined due to the position of the piston. The no. 6 cylinder exhibited no evidence of heat distress or evidence of high cylinder head temperature operation.

Six holes were drilled in the crankcase to facilitate internal examination. Using a lighted borescope, the internal components were examined. The crankshaft, connecting rods, and pistons were found unremarkable. No evidence of any catastrophic failure was observed.

The upper spark plugs exhibited normal operational signatures. Cylinder nos. 2 and 6 were corroded. Cylinder no. 1, 3, 4, 5, were wet, but exhibited grey deposits within the electrode area.

The ignition harness was impact damaged.

The left and right magneto were separated and not located within the recovered wreckage.

The fuel manifold valve was impact damaged. The manifold valve was disassembled, and the internal spring, diaphragm, and screen were intact.

The fuel pump remained attached to the engine. The fuel pump was removed, and the drive shaft was intact. The fuel pump drive shaft rotated by hand. The mixture control arm was impact damaged but moved from stop to stop by hand. The fuel pump was disassembled and was found to be unremarkable.

The throttle body was impact damaged. The throttle arm moved stiffly from stop to stop with corresponding movement of the throttle plate.

The no. 1, 2, 3, and 5 fuel injectors were free of debris. No. 4 and 6 were impact damaged.

The induction system was impact damaged and partially separated from the engine.

The exhaust system was impact damaged.

No obstructions were observed in the induction or exhaust systems.

4.0 Recovered Propeller

The propeller blades remained attached to the propeller hub. One propeller blade exhibited "S" bending and was twisted/curled opposite direction of the rotation from about mid-span of the blade. Multi-directional striations were observed on the cambered side of the propeller blade. The second propeller blade remained attached to the propeller hub. The outboard tip of the propeller blade exhibited leading edge dents. A gouge in the trailing edge was observed about mid-span. Multi-directional striations were observed on the cambered side of the blade. The remaining propeller blade exhibited forward bending near the blade tip.

Submitted by:

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