

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN24FA083

AIFRAME & ENGINE EXAMINATION

June 10, 2024

A. ACCIDENT

Location: Delores, Colorado
Date: January 6, 2024
Time: 0945 Mountain Standard Time
1645 UTC
Airplane: Just Highlander Airplane

B. AIFRAME & ENGINE EXAMINATION

Investigator	Dr. David Bowling National Transportation Safety Board Aurora, Colorado
Group Member	John Ellis National Transportation Safety Board Washington, DC
Mechanic	Jamie Ramirez Beegles Aircraft Services Greeley, Colorado
Group Member	Cory Maxon National Transportation Safety Board Aurora, Colorado
Group Member	Brad Miller National Transportation Safety Board Aurora, Colorado

See Attachment 1 for Contact Information and Signatures

C. SUMMARY

On January 6, 2024, about 0945 mountain standard time a Just Highlander airplane, N712DG, was destroyed when it was involved in an accident near Dolores, Colorado. Both pilots sustained fatal injuries. The airplane was operated as Title 14 *Code of Federal Regulations* personal flight.

According to Automated Dependent Surveillance – Broadcast (ADS-B) data, the airplane was flown from the Cortez Municipal Airport (CEZ), Cortez, Colorado on January 4, 2024. The data showed the departure time of about 1601. The airplane landed at the pilot's private dirt airstrip about 1616. The airplane was parked outside at

the private airstrip until the morning of January 6, 2024. The distance from CEZ to the private airstrip was about 17 miles.

On the morning of January 6, about 0915, a family member received a text message from one of the pilots that they were flying back to CEZ. The family member responded but did not receive a response. The family called local authorities. An Alert Notice (ALNOT) was issued, and a search team was assembled. According to the time stamp of the departure text messages, the time of the accident was after 0915 and before 1000. For the purposes of the report, the time of the accident was about 0945.

On January 7, about 1400, the airplane wreckage was located by local law enforcement beyond the departure end of the private runway. A severe post-impact fire consumed most of the airplane. See Figure 1. Detailed examination of the accident site showed that the airplane went off the end of the runway, impacted a 3-wire barbed wire fence, and came to rest upright about 610 ft. beyond the departure end of the snow-covered dirt runway, heading about 175°. The approximate runway heading was 250°. The length of the runway was about 1,800 ft, and its width was about 30 ft.



Figure 1. Airplane Wreckage.

Severe fire damage consumed all the fabric flight control surfaces, and all the cockpit instruments. Other than damage from impact forces and fire, examination of the flight controls and airframe did not reveal any pre-impact anomalies. Flight control continuity from the cockpit to the ailerons, elevator, and rudder was confirmed. The flap position could not be confirmed due to severe fire damage. The tubular frame structure was mostly intact, but fire damaged. The engine was separated from the fuselage and displayed severe fire damage. See Figure 2. The 3-bladed propeller assembly was found separated from the engine. It was located behind the empennage and did not have fire damage. Two of the composite propeller blade's spans were damaged, and one of the blades had about 3 turns of the barbed wire wrapped around its root, consistent with rotation at the time of impact with the fence. See Figure 3. The airplane wreckage was recovered to a secure facility near Denver, Colorado.



Figure 2. Airplane Engine.



Figure 3. Propeller.

There were no witnesses to the accident. A local pilot that was flying in the area reported that he and his pilot-rated-passenger saw 3 tire tracks on the snow-covered dirt runway near the estimated time that the accident occurred. See Figure 4. Since the airplane departed from CEZ on January 4, until it took off from the private runway on the morning of January 6, temperatures were mostly below freezing. Cycles of snow and sun melting that resulted in areas of surface ice prevailed throughout the area. The weather conditions were confirmed by reports of residents who lived in the area, and a preliminary National Transportation Safety Board weather study.



Figure 4. Airstrip and Tire Marks.

D. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

The airframe, engine and propeller were examined at Beegles Aircraft Services, Greeley, Colorado on June 10, 2024. The engine and propeller were both separated from the airframe. The wings were also separated from the airframe at the wing roots. The cabin, fuselage, and empennage tubing were intact. The cabin floor with the rudder pedals were bent downward and charred by fire. The two seat frames remained, but the fabric was consumed by fire. All the fabric coverings were burned and consumed by fire. The remaining cabin, fuselage, empennage, and wings tubing were charred and melted. See figure 5.

Figure 5. Fuselage and Cabin Frame.

1.1 Fuselage

The fuselage fabric was consumed by fire. The tube frame was intact but charred and melted. The battery was charred and melted. See Figure 6. The baggage area was broken, burned, and partially consumed. The cabin area to include the instrument panel, engine controls, and control yokes was consumed by fire. The push-pull tube to the elevator, the control tubes to the ailerons, and the cables to the elevator trim and rudder were intact but showed fire damage. The flap lever was charred and melted. The lever was in the flaps up position. See Figure 7. The main landing gear were bent upward. The left main landing gear tire and brake lines were intact. Both showed fire damage. The right main landing gear was bent upward and sustained fire damage. The right main tire was consumed by fire.



Figure 6. Fuselage Frame, Battery, and Baggage Compartment

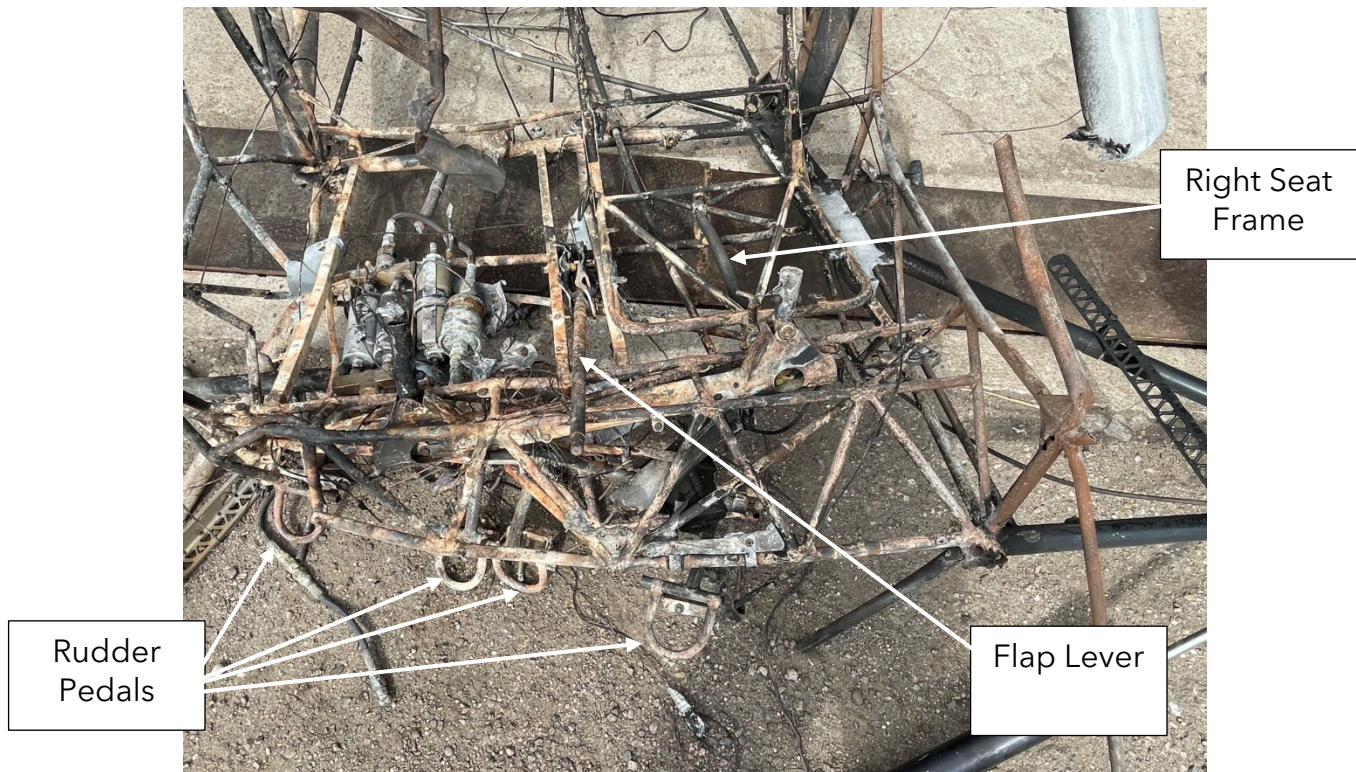


Figure 7. Cabin and Right Seat Frame, Flap Lever

1.2 Empennage

The rudder and vertical stabilizer skin was mostly consumed by fire. The frame remained but was charred and melted. Control continuity was established from the cabin to the rudder. The elevator and horizontal stabilizer skin was consumed by fire. The frame remained but was charred and melted. Control continuity was established from the cabin to the elevator and the elevator trim tab. The tailwheel was undamaged. Cables from the tailwheel to the rudder pedals were intact and showed continuity. See Figure 8.



Figure 8. Empennage Frame and Tailwheel.

1.3 Wings

The wings were separated at the fuselage. The fabric was consumed by fire. The struts were observed cut for transport. The forward and aft wing spar tubes were charred and melted; the ribs were consumed by fire. The control tube and cables to the ailerons were intact, charred and melted. The cables and pulleys were intact, and the cables showed overload failures near the wing roots. Control continuity to the ailerons was confirmed. The fuel tanks were consumed by fire.



Figure 9. Right Wing Spar Tube, Aileron pulleys and Cables.

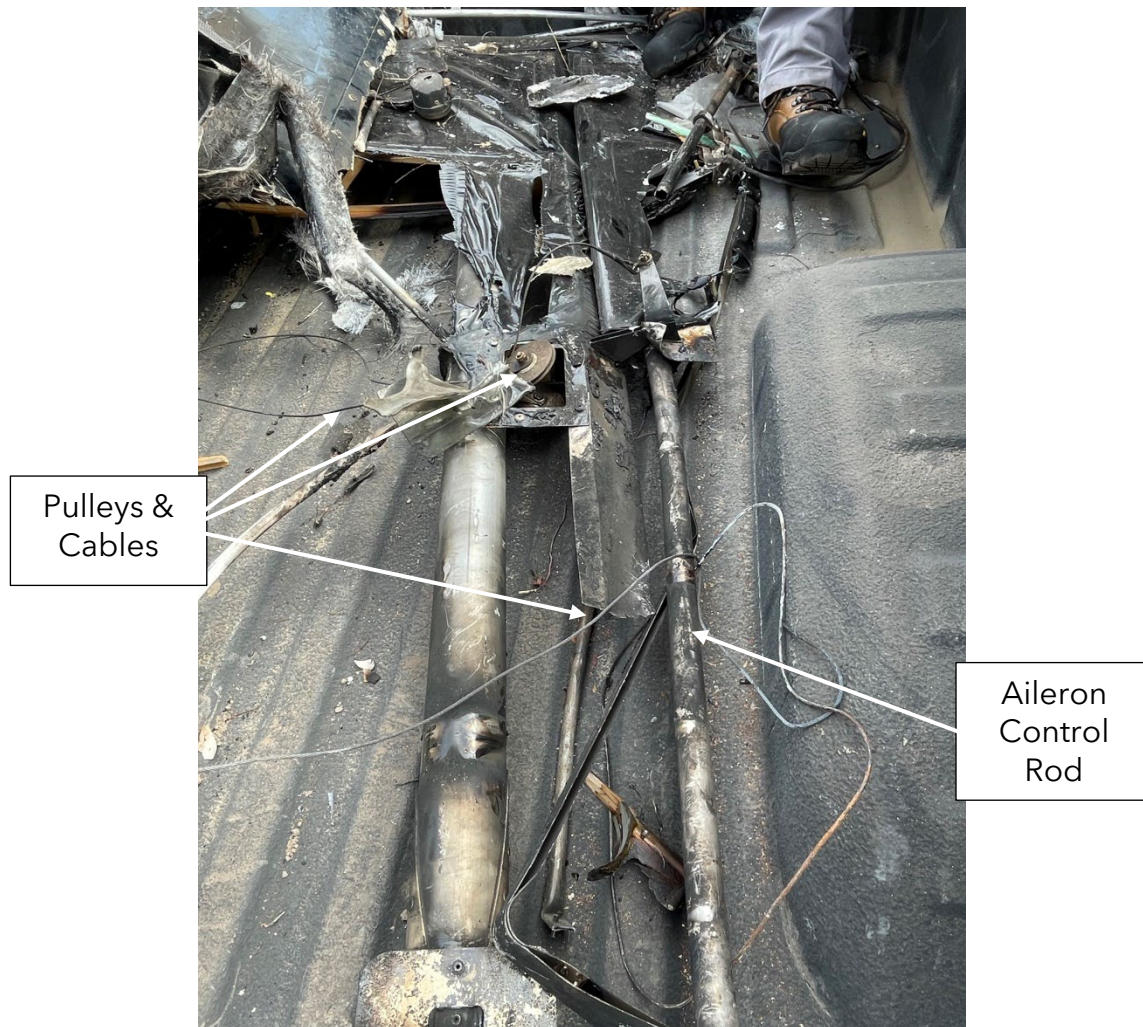


Figure 10. Right Wing Spar Tube, Aileron pulleys and Cables.

2.0 Engine Examination

The 4-cylinder Rotax 914UL engine, Serial No. 6770317, was separated from the fuselage at the firewall. The firewall remained with the engine and was broken and bent over the engine mounts and the aft portion of the engine. All of the engine components were separated from the engine. The ignition system was consumed by fire. The accessory drive gear was melted into the back of the engine. The intake and exhaust tubing to the cylinders showed impact and fire damage. Much of the tubing was consumed by fire. The remainder of the reduction gear drive housing was removed to expose the drive gear from the crankshaft.

The rocker box covers were removed from all four cylinders. The valve springs and rockers were intact and showed no damage. An attempt was made to rotate the engine. The engine crankshaft would move only slightly. The left side cylinders were removed from the engine case. The valves were intact and seated properly and showed heat signatures. The push rods to the rockers were intact and straight. The

pistons were intact and showed slight heat signatures. Oil was present in the cylinders. The piston rods and crankshaft journals were intact. The piston rods showed some corrosion. All observations of the engine and surviving components confirmed that there were no preaccident mechanical failures or malfunctions with the engine that would have precluded its normal operation.

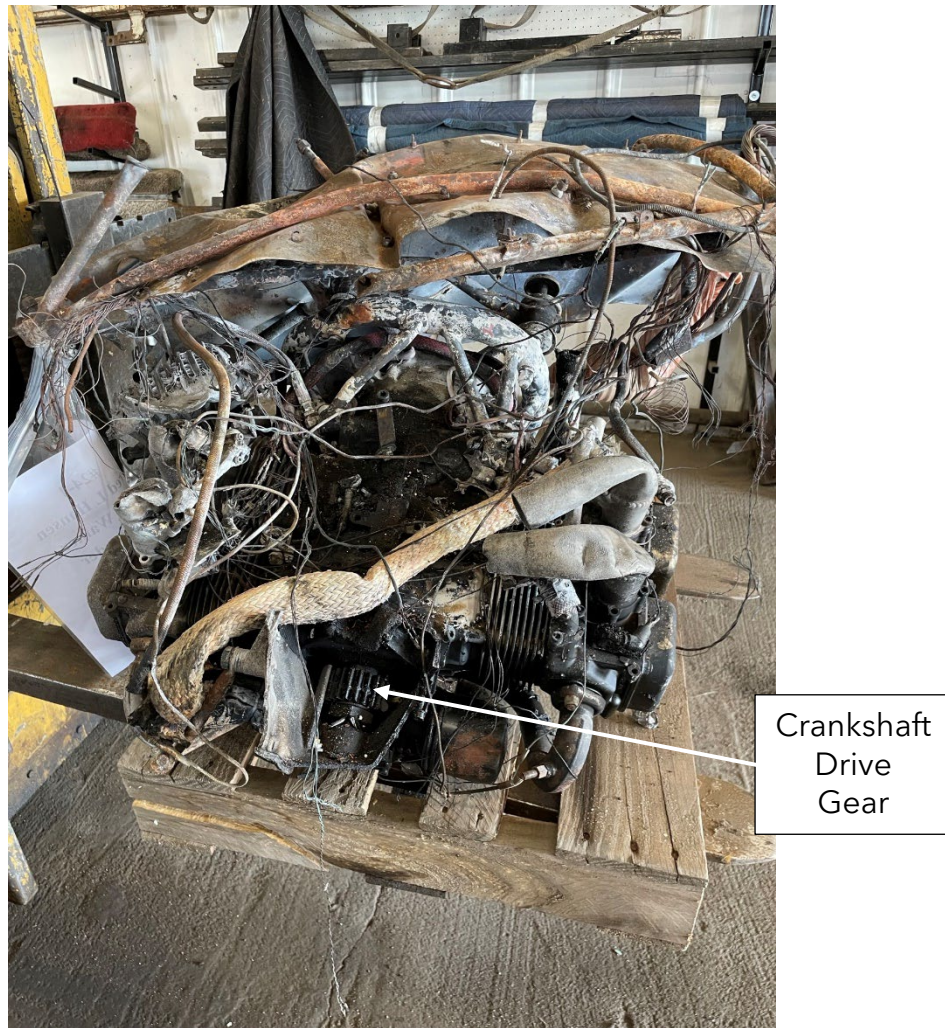


Figure 11. Engine Top Front View.



Figure 12. Engine, Left Side View.



Figure 13. Engine Aft View.



Figure 14. Right Side View.

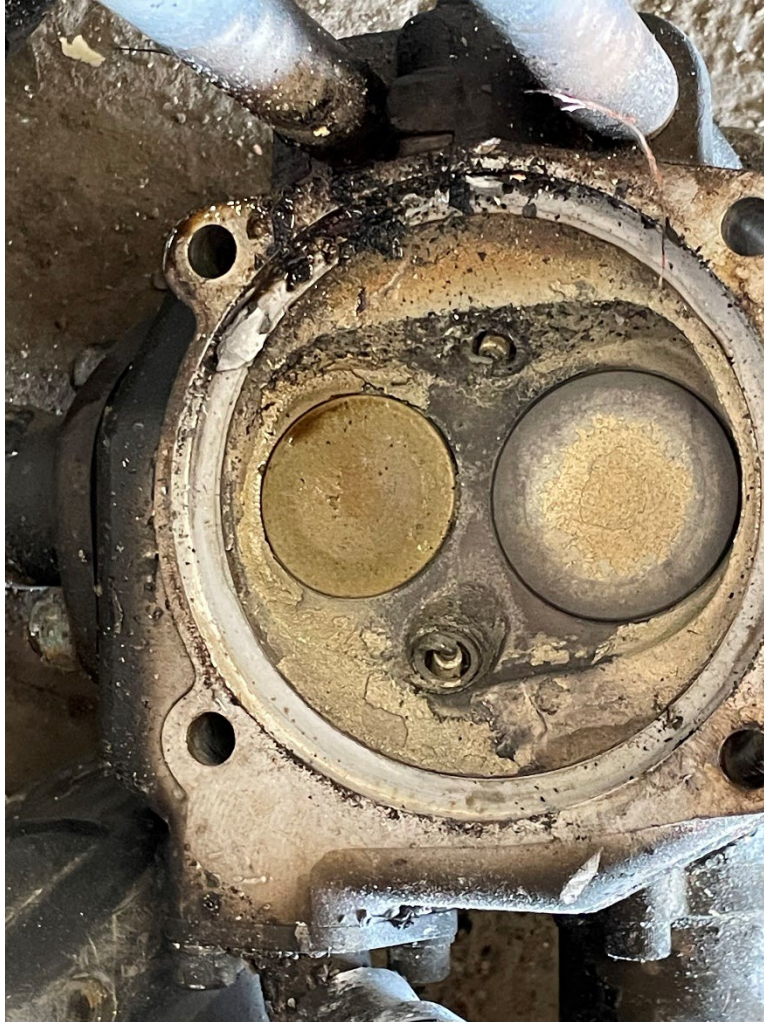


Figure 15. Right Front Cylinder Valves.

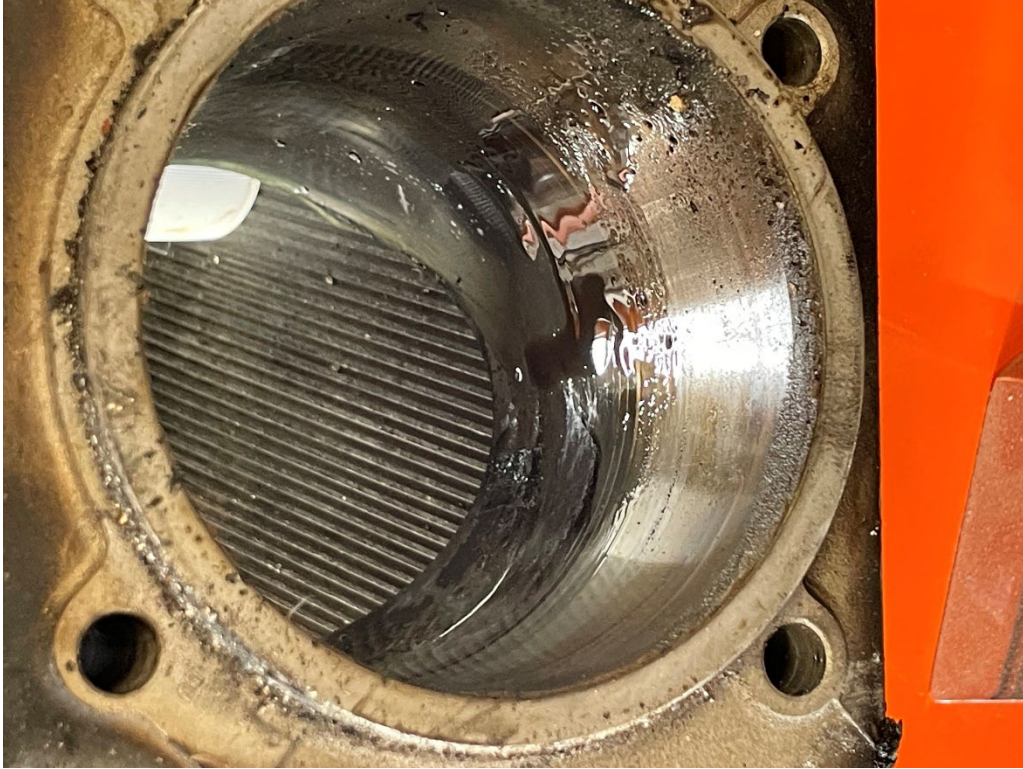


Figure 16. Right Front Cylinder.



Figure 17. Right Front Piston and Push Rods.

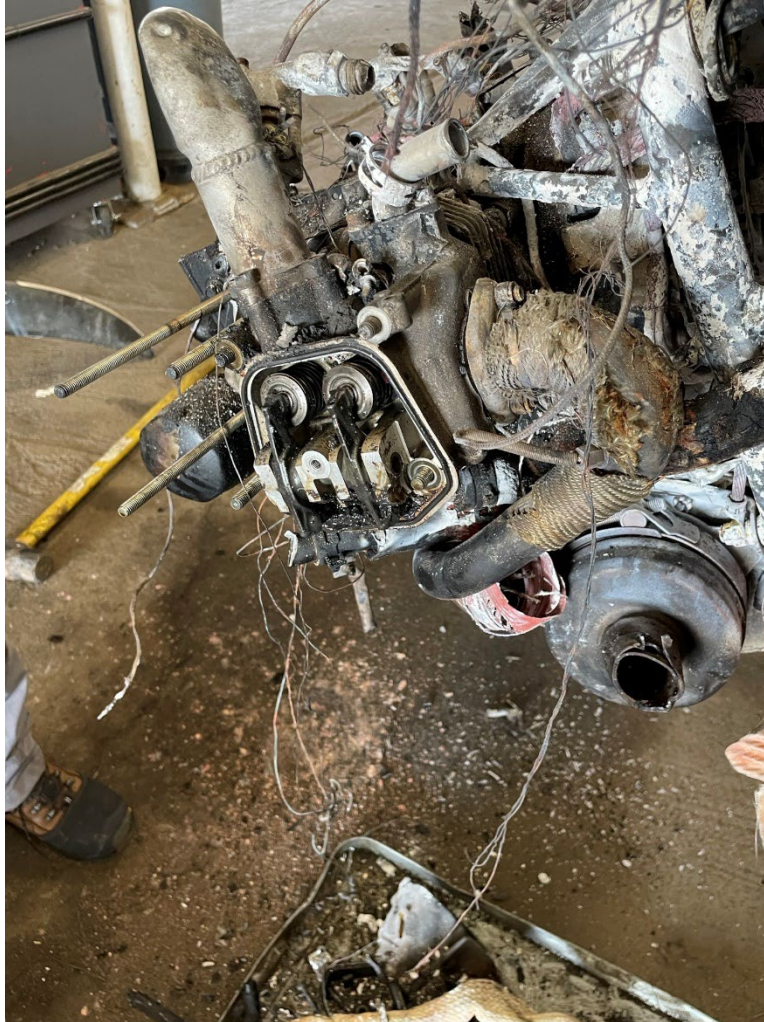


Figure 18. Right Rear Cylinder Rockers and Valve Springs.



Figure 19. Right Side Pistons



Figure 20. Right Rear Cylinder with Push Rods.

3.0 Propeller Examination

The three bladed propeller was separated from the engine at the gear reduction housing. The spinner was broken out and fragmented. The blades were intact and showed impact damage. The blades were labeled A, B, and C.

Blade A, Serial No. V2461 showed leading edge fractures and splinters. A large nick was observed in the metal leading edge stripping 6 inches inboard of the blade tip. See Figure 21 and 22.



Figure 21. Propeller Blade A.



Figure 22. Propeller Blade A Leading Edge.

Blade B, Serial No. V2459, showed leading edge nicks and splinters. The blade trailing edge was split from the root to the tip. See Figure 23. There was a tear in the composite front face of the blade approximately 8 inches outboard of the hub. See Figure 24. A 4-foot length of barbed wire was observed wrapped around the blade at the hub. See Figure 25.



Figure 23. Propeller Blade B Trailing Edge.



Figure 24. Propeller Blade B Front Face.

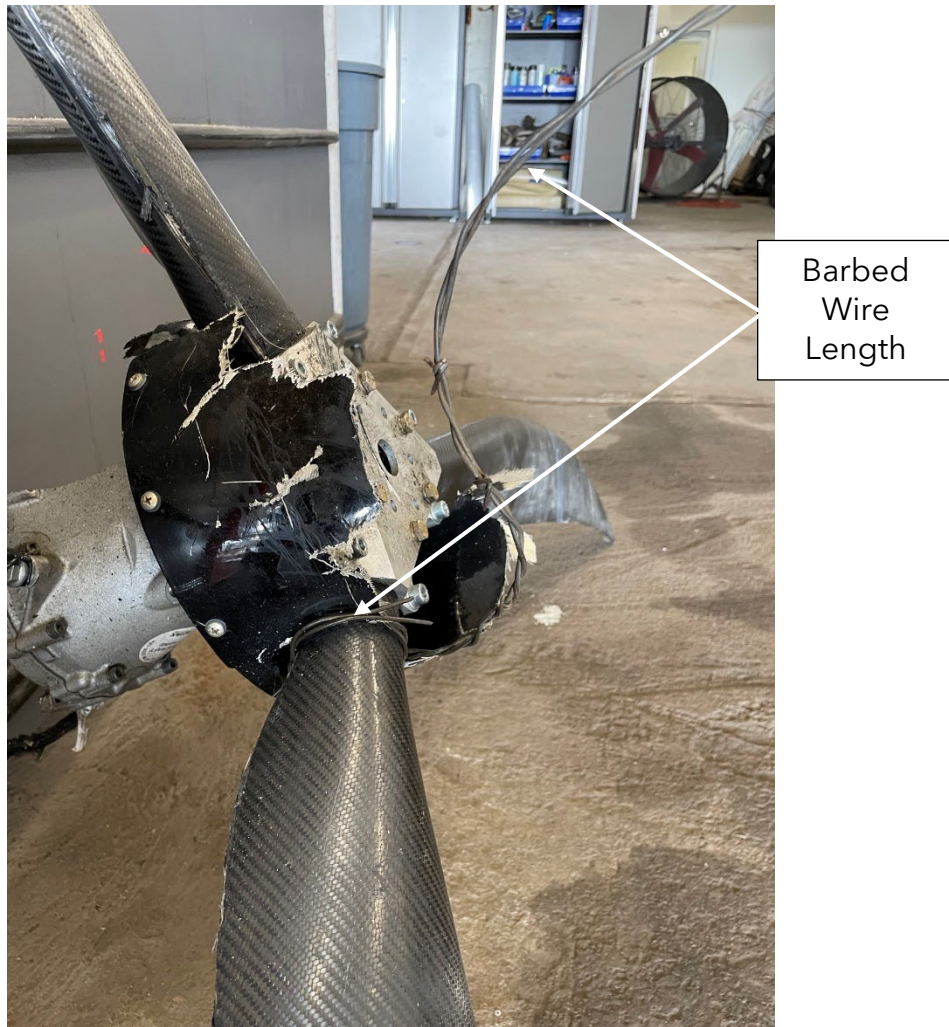


Figure 25. Propeller Blade B and Barbed Wire.

Blade C, Serial No. V2460, was intact and showed aft bending. See Figure 26. A deep nick was observed in the metal leading edge strip 8 inches inboard of the blade tip. A face fracture was observed approximately 9 inches inboard of the blade tip. See Figure 27.



Figure 26. Propeller Blade C.



Figure 27. Propeller Blade C Fracture.

SUMMARY

The examination of the airframe, engine and propeller showed no preaccident failures or malfunctions with this airplane that would have precluded normal operation.

All components were returned to storage at Beegles Aircraft Services.

Submitted by:

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