

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA23LA131

WRECKAGE EXAM SUMMARY

March 1, 2023

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A. ACCIDENT

Location: Hillsville, VA
Date: February 27, 2023
Time: 1715 EST
2215 UTC
Airplane: Cessna 150G, N2991J

B. WRECKAGE EXAM SUMMARY

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C. SUMMARY

On February 27, 2023, about 1715 eastern standard time, a Cessna 150G, N2991J, was substantially damaged when it was involved in an accident near Hillsville, VA. The private pilot was fatally injured. The airplane was operated as a Title 14 Code of Federal Regulations (CFR) Part 91 personal flight. An ALNOT was issued at 1946 EST February 27, 2023, after family and friends reported the aircraft missing. The airplane was found by a private citizen at about 1030 February 28, 2023.

D. DETAILS OF THE INVESTIGATION

1.0 Accident Site

The airplane came to rest in a wooded area at an elevation of 2776 ft mean sea level. The airplane impacted a tree about 205 ft prior to the final resting place. There was no evidence of fire, and all major components of the airframe were located in the vicinity of the main wreckage. Flight control continuity was confirmed from the flight controls in the cockpit to the flight control surfaces through multiple overload breaks.

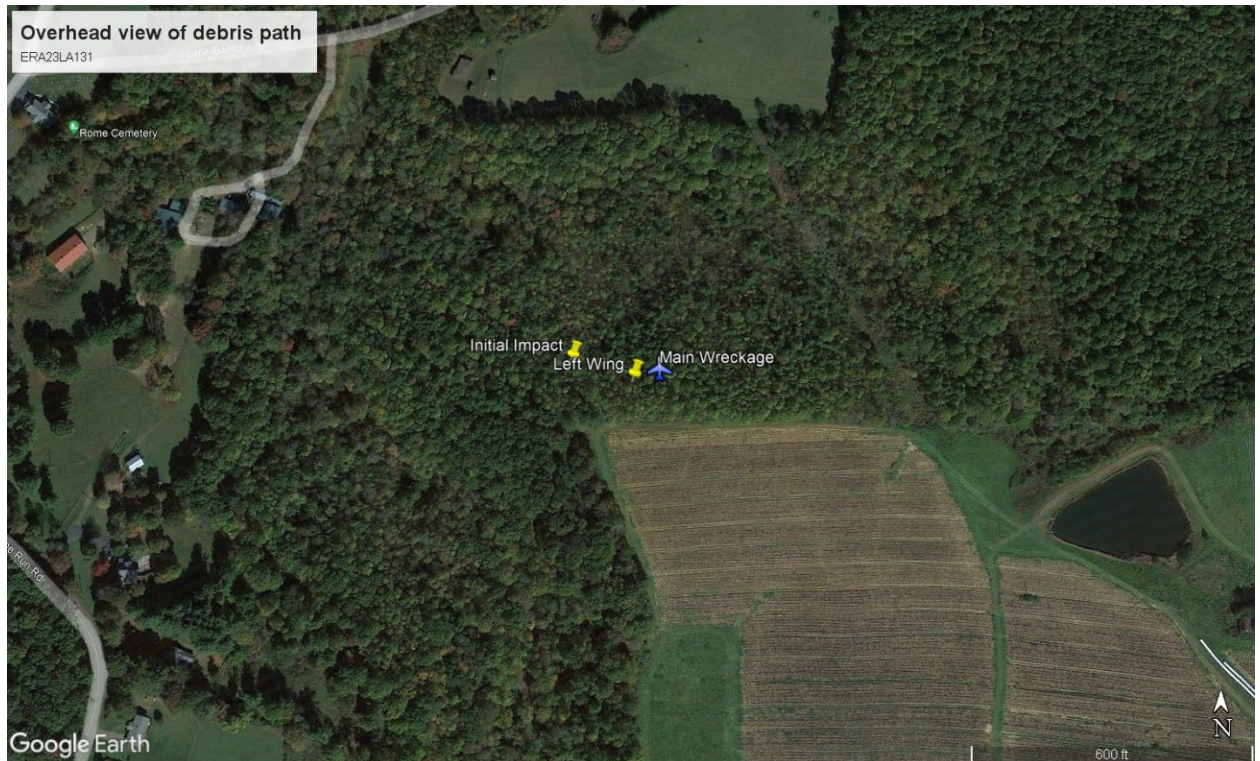


Figure 1: Debris path overview

2.0 Airframe Examination

2.1 Fuselage

The fuselage remained intact but exhibited impact damage. There was no evidence of a fire.



Figure 2: Front view of wreckage



Figure 3: View of wreckage from aft left corner

2.2 Empennage

The empennage was twisted to the right but remained attached to the fuselage. The left horizontal stabilizer remained attached, and the leading edge was impact damaged, the tip of the leading edge was impact separated. The left elevator remained attached to the left horizontal stabilizer at all attachment points and the counterweight was impact separated. The right horizontal stabilizer was impact crushed aft but remained attached to the empennage. The right elevator remained attached to the right horizontal stabilizer at all attachment points and exhibited impact damage. Elevator trim tab remained attached at all attachment points and measured 5° tab up. Vertical stabilizer remained attached, and the tip was impact separated. The rudder remained attached and exhibited damage on the top and bottom.



Figure 4: View of empennage from front right side



Figure 5: View of empennage from the rear

2.3 Aircraft Wings

The left wing was impact separated outboard of the flap and found about 60ft from the main wreckage. The left aileron remained attached to the left wing at all attachment points. The leading edge showed aft crushing with a 1.5 ft deep semicircular indent. The wing tip remained attached to the wing. The inboard section of the left wing remained attached to the fuselage and the leading edge was crushed aft along the whole length. The flap remained attached and retracted.



Figure 6: Impact separated section of the left wing



Figure 7: Impact separated left wing section



Figure 8: Left wing attached to fuselage

The right wing was impact crushed aft and a section outboard of the flap remained attached by an aileron control cable, the inboard section remained attached to the fuselage. The flap remained attached and in the retracted position, about a 1 ft outboard section was impact separated.



Figure 9: Outboard right wing section



Figure 10: Inboard right wing section

2.4 Landing Gear

The right main landing gear was impact separated. The left main landing gear and nose landing gear remained attached to the airframe.



Figure 11: Right main landing gear impact separated



Figure 12: Left main landing gear and nose landing gear

2.5 Cockpit

The carburetor heat knob was partially out. The cabin heat was found in the On position, and the cabin air was found in the Off position. The landing lights were found in the Off position, the beacon light was found in the On position, and the navigation lights were found in the Off position. The throttle was found to be mid travel and the fuel mixture was found full rich. A spare crankcase was found secured to the right front seat and other engine parts were found in the rear baggage compartment. The two seats were equipped with lap belts only.



Figure 13: Overview of the cockpit (Textron Photo)



Figure 14: Overview of the cockpit instrument panel

2.6 Survivability

The left seat remained partially attached and was equipped with a lap belt only. The lap belt attach points remained attached to the fuselage. During removal of the pilot first responders did not cut or unbuckle the seatbelt. The right seat remained partially attached and was equipped with a lap belt only. The lap belt attach points remained attached to the fuselage.

2.7 Fuel/Fuel System

Both the right and left fuel tanks were examined with a lighted borescope and were found to be intact. The left fuel tank showed no fuel but an odor similar to 100LL was noted on scene, the cap remained seated. Fuel was noted in the right fuel tank and the cap remained seated. The fuel selector was found in the on position. The fuel strainer bowl contained a small amount of debris and the strainer screen was clear of debris. Continuity of the fuel system was confirmed by blowing air through the system.

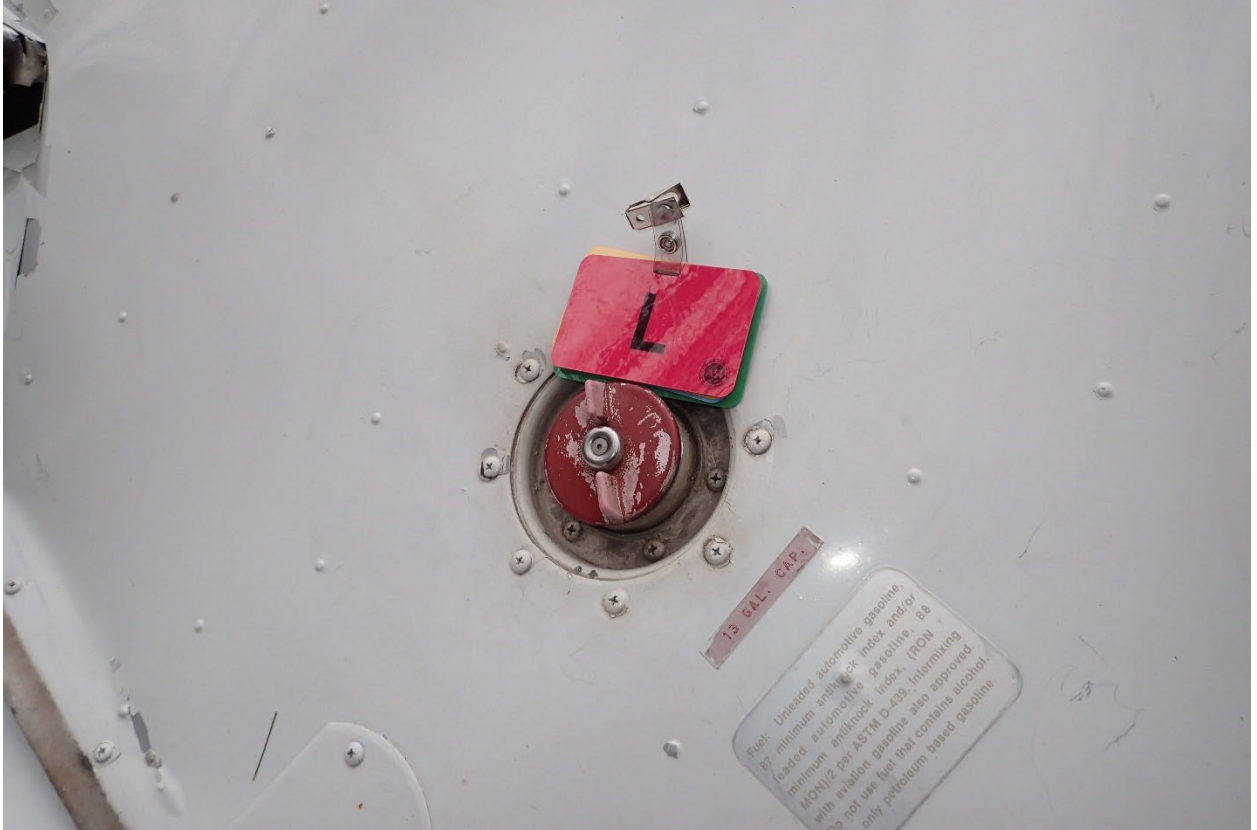


Figure 15: Left fuel tank cap (Textron Photo)



Figure 16: Right fuel cap secured (Textron Photo)



Figure 17: Fuel selector in the on position



Figure 18: Debris in bowl of fuel strainer



Figure 19: Fuel strainer screen (Textron Photo)

2.8 Other Systems

The emergency locator transmitter (ELT) was found secured in the aircraft fuselage and it was in the off position. The ELT battery expiration date was September 1, 2025.



Figure 20: ELT in the off position

3.0 Engine Examination

The crankcase was examined and did not have any holes. The cylinders were examined with a lighted borescope and no anomalies were noted. Crankshaft continuity was confirmed by rotating the propeller through 720° of rotation. Compression and suction were confirmed on all cylinders by rotating the propeller. The rocker covers were removed from the cylinders and valve train continuity was confirmed by rotating the propeller.

3.1 Magnetos

The airplane was equipped with 1 standard magneto which remained attached to the accessory case of the engine. It was also equipped with 1 Surefly electronic ignition system both remained attached the engine. Spark was obtained on all leads from the standard magneto.

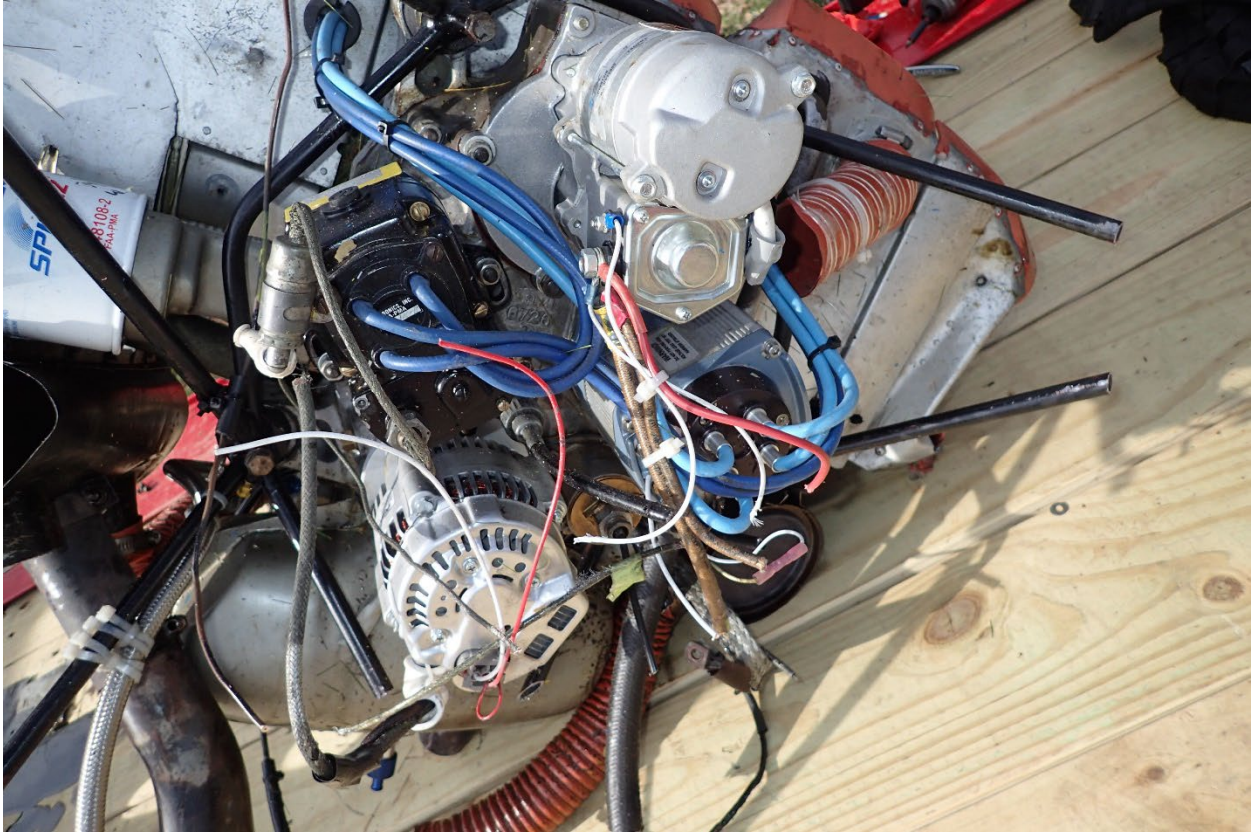


Figure 21: View of the accessories on the engine

3.2 Ignition System

The airplane was equipped with a starter motor that remained attached to the accessory case of the engine. The top spark plugs were removed and examined using the Champion Aerospace Aviation Check-A-Plug chart. The no. 1 top sparkplug exhibited signs of carbon fouling, the nos. 2, 3, and 4 top sparkplugs exhibited worn out - normal wear.



Figure 22: Top view of the top spark plugs



Figure 23: Cylinder 1 and 3 top sparkplugs



Figure 24: Cylinder 2 and 4 top sparkplugs

3.3 Fuel System

The carburetor was removed and disassembled. The accelerator pump was operated by hand and no anomalies were noted. There was fuel in the carburetor bowl, it was free of debris it was tested with water finding paste and it none was detected. The floats were examined and were not damaged. The fuel inlet screen was examined, and no debris was noted. The float needle valve was examined and operated without anomalies. The air inlet filter was examined and a small amount of organic tree debris was noted.

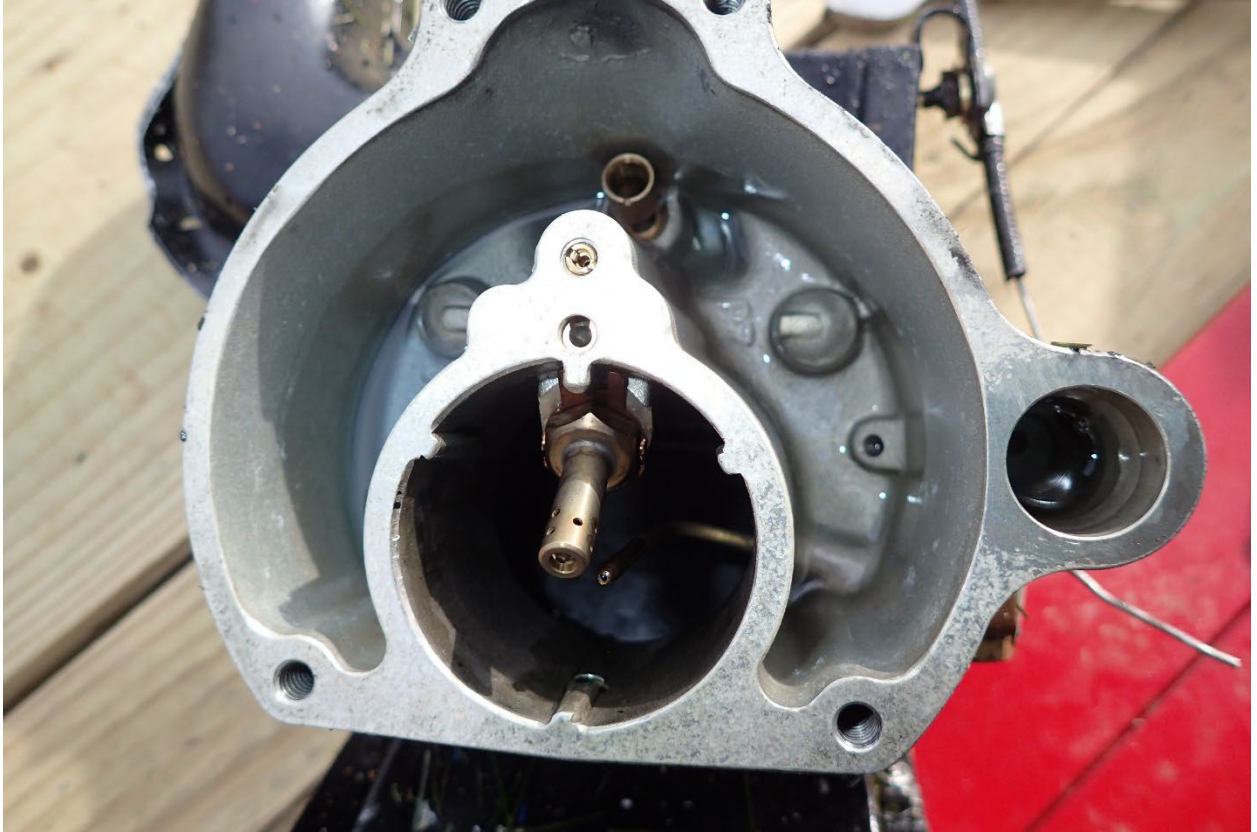


Figure 25: Carburetor bowl (Textron Photo)

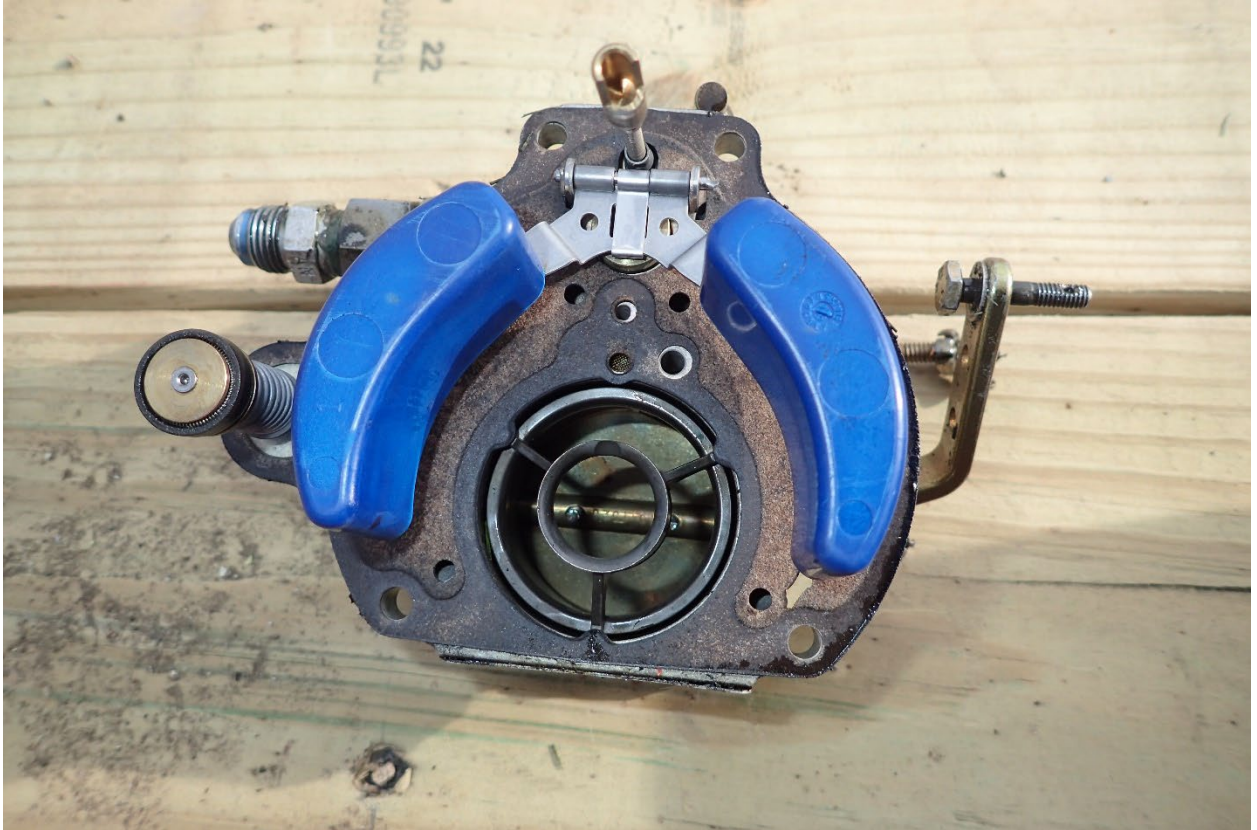


Figure 26: Carburetor top housing (Textron Photo)



Figure 27: Fuel inlet screen (Textron Photo)



Figure 28: Air inlet filter with tree debris (Textron Photo)

3.4 Lubrication System

The oil filter remained attached to the engine. The oil filter cap remained attached and seated. Oil was noted throughout the engine.



Figure 29: Oil filter attached to engine



Figure 30: Oil fill cap secured to the engine

4.0 Propeller Examination

The fixed pitch propeller remained attached to the crankshaft flange and the two blades remained attached to the hub. Blade A exhibited chord wise scratching and was bent about 10°. Blade B exhibited chord wise scratching and s-bending. There were multiple pieces of wood cut at a 45° angle with black/grey paint transfer, consistent with propeller strikes.



Figure 31: Overview of the propeller (Textron Photo)



Figure 32: Wood with a 45 degree cut (Textron Photo)



Figure 33: Wood with 45 degree cut and black/grey paint transfer

Submitted by:

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