



NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety

Wreckage Examination Summary

March 5 – March 8, 2021

A. ACCIDENT ERA21FA148

Location: Purcellville, Virginia
Date: March 4, 2021
Time: 1510 Eastern Standard Time (EST)
Operator: Private
Aircraft: Beech C-23
Registration: N67013

B. PARTICIPANTS:

Participant: Heidi Kemner
National Transportation Safety Board
Ashburn, Virginia

Participant: Lynn Spencer
National Transportation Safety Board
Ashburn, Virginia

Participant: David Reese
FAA/FSDO
Dulles, Virginia

Participant: Pete Basile
Textron Aviation
Wichita, Kansas

Participant: Ryan Enders
Lycoming Engines
Williamsport, Pennsylvania

C. SUMMARY

On March 5, 2021, about 1510 eastern standard time, a Beech C-23, N67103, was substantially damaged when it was involved in an accident near Purcellville, Virginia. The private pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

D. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

The airplane struck several trees and came to rest in a heavily wooded area about 600 ft from the departure end of runway 19 at an elevation of about 690 ft mean sea level. There was no post impact fire and an odor of 100LL aviation fuel was noted at the site. All major components of the airplane were located in the vicinity of the main wreckage.

Lat/Long of Main Wreckage

N 39.23045°

W 077.74829°



Figure 1. Accident Site Diagram

The initial tree impact scars were located about 326 ft and 124° from the departure end of runway 19 at Krens Farm Airport (14VA). From the initial tree scars, the debris field extended 306 ft and 128°. The right wingtip was located 68 ft beyond the tree, followed by the right) main landing gear at a distance of 244 ft, the left wing at 262 ft (displaced 25 ft to the left of the debris line), the vertical stabilizer and rudder at 281 ft and the main wreckage at 306 ft.

Left Wing



Figure 2. Left Wing

The left wing was impact separated at the wing root and located about 40 ft prior to the main wreckage. The outboard approximate 5 ft leading edge of the left wing was impact damaged and crushed aft. The wing tip was impact separated and located along the debris path. The pitot tube remained attached to the wing and was free of debris. The left main landing gear was impact separated and located along the debris path. The left flap remained attached to the wing at the outboard attach points, was bent outboard, and the trailing edge was impact damaged. The left aileron remained attached to the left wing through all attached points and the trailing edge was impact damaged. The left wing fuel cap remained seated and locked. The left wing fuel tank was breached. Control cable continuity was confirmed from aileron to the fuselage through overload fractures. The stall warning horn tab could be moved without issue.

Empennage



Figure 3. Rudder and Vertical Stabilizer

The rudder was impact separated from the vertical stabilizer and the vertical stabilizer was impact separated from the empennage and located about 20 ft prior to the main wreckage. The leading edge of the vertical stabilizer exhibited impact damage.

The horizontal stabilator remained attached to the empennage. The horizontal stabilator tips were impact separated. The trim tab remained attached to the horizontal stabilator. The left side of the horizontal stabilator was impact bent aft about 60°. The right horizontal stabilator had a nest located inside of the structure. Control cable continuity of the stabilator was confirmed to the cockpit. The trim actuator was measured and measured about 1.47 inches, which corresponded to about a -1° trailing edge down.



Figure 4. Nest inside right side of horizontal stabilator.

The ELT was located inside the empennage secured to the fuselage. It was removed and found in the OFF position.

Right Wing



Figure 5. Right Wing

The right wing was impact separated and remained attached to the fuselage through cables. The cables were cut to facilitate recovery. The right flap was separated from the right wing. The right aileron remained attached to the right wing at all attach points. The right wheel was impact separated from the right wing and located along the debris path. The right wing fuel cap remained seated and locked. The right wing fuel tank was breached. Control cable continuity was confirmed from the aileron to the cockpit.

Fuselage and Cabin



Figure 6. Main Wreckage

The fuselage was wrinkled and exhibited impact damage along the entire length. The cabin door remained attached to the fuselage and the handle was in the closed position. The door latch was not impact damaged and could be operated by hand. The cabin was crushed down on the left side and the windscreen was shattered. Both control yokes remained attached to the control columns and the rudder pedals remained attached to their mounts.

The throttle and mixture controls were in the full forward position. Control cable continuity was confirmed from the cockpit controls to the engine. The fuel strainer was examined, and no debris was noted in the screen.

Instrument Documentation –

Flap handle position – extended

Hobbs – 1015.5

Tach – 1968.93 hrs

RPM – 0

Altimeter – 2,200 ft

Fuel Selector – Left Tank

Master Switch – OFF

Avionics Master – OFF
Fuel Boost – OFF
Magnetos Switch – BOTH

The pilot's lap belt was buckled but cut by first responders. The shoulder harness was not engaged. The right front seat was not buckled.

2.0 Engine and Propeller Examination

The engine remained attached to the fuselage.

The fixed-pitch propeller remained attached to the engine. Both propeller blades remained attached to the propeller hub. One blade was bent aft about 45° and exhibited leading edge gouging and chordwise scratching. The other propeller blade was slightly bent aft and exhibited chordwise scratching, leading edge gouging, and tip tearing.



Figure 7. View of leading edge gouging, chordwise scratching, and tip tearing on one propeller blade.

The engine was removed from the airframe for further examination. Crankshaft continuity and valvetrain continuity were confirmed by rotating the propeller hub by hand. Thumb compression and suction was observed on all cylinders. The spark plugs were removed and examined. The Nos. 2 and 4 spark plugs were oil soaked. All other spark plugs were light grey in color and were in new condition. Spark was observed on all towers of the left and right magneto.

The engine driven fuel pump was removed from the engine and contained fuel. It was operated by hand and pumped fuel. It was disassembled and the diaphragm was intact. When it was moved the diaphragm was not elastic. The carburetor was impact damaged and partially separated from the engine. Fuel was noted in the line from the carburetor to the engine driven fuel pump.

The oil filter remained attached to the engine. It was removed and examined. It had a date and tach time written on it – 1965.76 hrs and 10-19. The oil suction screen was removed, examined, and did not exhibit any debris. The oil filler neck was impact damaged and the oil dip stick remain seated and in place.

The vacuum pump was removed from the engine and disassembled. There rotor and vanes were intact. In addition, when the drive shaft was moved by hand air flowed through the vacuum pump.

The starter was engaged with the starter ring.

3.0 Aerodrome Information

Krens Farm Airport (14VA) was located 2 miles northwest of Hillsboro, Virginia. The reported elevation was 790 ft mean sea level. It had one runway designated as 01/19, which was 1900 ft long by 50 ft wide. At the approach end of runway 19, the elevation of the runway was 749 ft msl. At the highest point on the runway, which was 400 ft from the beginning of the runway, the elevation was 756 ft. At the departure end of runway 19 the elevation was 690 ft. The airport had two windsocks on the field; one about 500 ft from the departure end of runway 19 and one past the departure end of runway 19.