

National Transportation Safety Board

Office of Aviation Safety

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ERA23LA342

WRECKAGE EXAMINATION

September 19, 2023

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A. ACCIDENT

Location: Greer, South Carolina
Date: August 20, 2023
Time: 1200 EDT
1600 UTC
Airplane: N9360S, Beech C23

B. WRECKAGE EXAMINATION

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Marietta, Georgia

Party to Investigation: Kurt Gibson
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Party to Investigation: James Childers
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C. SUMMARY

On August 20, 2023, about 1200 eastern daylight time, a Beech C23 airplane, N9360S, was substantially damaged when it was involved in an accident near Greer, South Carolina. The private pilot and a passenger were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 post-maintenance test flight.

According to Federal Aviation Administration (FAA) inspectors, an annual inspection was recently completed on the airplane and the pilot and his mechanic were performing a post-maintenance test flight. A witness, who lived at the fly-in community where the airplane was maintained, reported that the airplane took off from runway 3 at Chandelle Airport (SC72), Greer, South Carolina. As the airplane passed his house, he heard a slight reduction in engine speed, followed by a slight increase in speed. The engine did not sputter or backfire. The airplane then turned toward the northwest and reached an altitude of about 500 ft above the ground. The witness then observed the left wing dip twice, level off, and the airplane descend as it turned to a westerly heading. The airplane descended below a tree line, and he then heard the airplane impact the ground.

FAA inspectors responded to the accident site and examined the wreckage. The wreckage was found upright, in an open field, about 1 mile north of SC72. There was

no fire. The fuselage was buckled in several areas and the forward windscreen was broken. The left wing was partially separated aft, just outboard of the left wing fuel tank.

D. DETAILS OF THE EXAMINATION

1.0 Accident Site

The NTSB did not observe the accident site. The initial scene response was accomplished by Columbia, South Carolina FAA personnel.

2.0 Airframe Examination

The wreckage was transported to Atlanta Air Recovery, Griffin, Georgia and a layout examination of the airframe and engine occurred on September 19, 2023.

2.1 Fuselage

The fuselage was buckled in several areas and the forward windscreen was broken.

2.2 Empennage

Flight control continuity was established for all of the primary and secondary flight controls from their respective control surface to their controls in the cockpit through breaks that were consistent with recovery cuts. The stabilator trim actuator measured to be 1.125 inches which corresponded to an approximate 2° tab up position of the stabilator trim.

2.3 Wings

Left Wing

Flight control continuity was established for all of the primary and secondary flight controls from their respective control surface to their controls in the cockpit through breaks that were consistent with recovery cuts.

The left wing had separated from the airframe outboard of the fuel tank and remained attached with by control cables.

The left fuel tank displayed impact damage and was breached in multiple locations and was devoid of fuel. The left fuel inlet screen was removed and was noted to be clear of any debris. The left fuel tank vent line was tested using low pressure air and was found to be unobstructed. The left fuel quantity transducer was removed, and it was noted that the float would stick approximately mid-travel; however, the float would move down with light vibration of the assembly. It was observed that the left fuel tank line going into the fuselage was severely deteriorated; however, when air or fuel was pushed into the line there were no fuel leaks observed.

Right Wing

Flight control continuity was established for all of the primary and secondary flight controls from their respective control surface to their controls in the cockpit through breaks that were consistent with recovery cuts.

The right fuel tank was undamaged and contained approximately 7 gallons of fuel that had the color and odor consistent with 100LL. The fuel tank was drained, and the fuel inlet screen was removed. The inlet screen was observed to be clear of any debris. The right fuel tank vent system was tested using low pressure air and was noted to be unobstructed. The right fuel gauge was removed and was noted that the flow was capable of normal movement.

The flap actuator jack screw displayed an exposed 23 threads which corresponded with an approximate 10° flaps extended position.

2.4 Landing Gear

All three landing gear separated during the impact with terrain.

2.5 Cockpit

The aircraft's installed tachometer read a tachometer time of 18.5 hours and the tachometer and tachometer cable appeared to be relatively new. There were no logbook entries regarding changing the tachometer.

The ignition key was found in the OFF position; however, the key displayed impact damage and was bent. The ignition switch was free to move in all normal positions.

The instrument panel and forward portion of the cockpit area displayed upward and aft crushing damage.

2.6 Survivability

The ELT had been removed prior the examination. The switch was found in the OFF position.

Both of the front seats displayed damage to their bases and backs with the left pilot seat displaying significant downward crushing of the seat cushion. The left lap seat restraint was found in the buckled position and was cut by first responders. The right lap seat restraint was found in the unbuckled position and was also cut by first responders. Both seats had available shoulder harnesses; however, their usage could not be determined at the time of the examination.

2.7 Fuel/Fuel System

The fuel selector was found in the LEFT position. Low pressure air was blown into the engine driven fuel pump inlet line at the firewall and air could be felt coming out of the fuel line going to the left fuel tank. The fuel selector was moved to the RIGHT position and low pressure air was blown into the engine fuel pump inlet line at the firewall and air could be felt coming out of the fuel line going to the right fuel tank. The fuel selector was removed and there were no visual signs of fuel leaks around the fuel selector valve. Fuel was poured into the selector valve in all fuel selector positions and the fuel selector valve operated normally.

The fuel strainer remained attached to its installation point and displayed impact damage signatures. The fuel strainer bowl and screen were removed and visually examined. The fuel strainer bowl was noted to be devoid of fuel during the examination. The screen contained a small amount of unidentified material in the screen; however, the screen was not obstructed.

3.0 Engine Examination

The engine remained partially attached to the aircraft fuselage through the tubular mount and was canted nose down about 45 degrees. The upper engine cowl was not present and the lower cowl was impact-damaged. The propeller spinner was crushed and twisted opposite the direction of crankshaft rotation. The induction air filter remained attached to the lower cowl. Dirt was observed on the filter but it was otherwise unobstructed. The engine was

removed from the airframe, suspended from a lift and partially disassembled to facilitate the examination. The exhaust tubing and exhaust tailpipe were partially crushed. The tailpipe was cut and the interior of the muffler observed using a lighted borescope and no obstruction observed. The propeller was removed and the engine crankshaft rotated using a tool inserted in the vacuum pump drive pad. Continuity of the crankshaft from the crankshaft flange to the rear gears and to the valve train were observed. Compression and suction were observed from all four cylinders.

A review of partial copies of the aircraft maintenance logbooks revealed that the most recent annual inspection was completed on 8/17/2023. At that time, the engine had accumulated 926.63 hours of time-in-service since the most recent engine overhaul.

The carburetor remained attached to the engine. The throttle control cable remained attached to the carburetor throttle control arm. The arm was observed in a mid-range position. The cockpit throttle control knob was also in a mid-range position. The mixture control cable remained attached to the carburetor mixture control arm. The cable support structure was impact damaged. The cockpit mixture control knob was observed in a forward position. The carburetor heat cable remained attached to the carburetor heat control arm. The induction air box and carburetor heat valve were crushed.

The carburetor was partially disassembled and no damage to the carburetor internal components observed. The fuel inlet screen was unobstructed. About a teaspoon of fuel was observed in the carburetor float bowl.

The engine driven fuel pump remained attached to the engine. Fuel drained from the pump when it was tilted. The pump produced air at the outlet port when actuated by hand. It was partially disassembled and no damage to the rubber diaphragms or internal check valves noted.

Both magnetos remained securely attached to the engine. Both were removed and produced spark from all ignition towers when rotated by hand.

The spark plug electrodes exhibited gray coloration and normal condition.

No damage to the ignition harness was noted.

The starter remained attached to the engine. No damage was noted and it was not removed.

The alternator remained attached to the engine. No damage was noted and it was not removed. The alternator belt remained in place and unbroken.

The vacuum pump remained attached to the engine and no damage was noted. It was removed and no damage noted to the drive coupling, carbon rotor or carbon vanes.

Oil was observed in the engine. No debris was observed on the oil suction screen or the oil filter media.

The bottom no. 1 and no. 2 spark plugs were oil-soaked which was consistent with post-accident accumulation. The Lycoming investigator reported there were no anomalies observed that would have prevented normal operation.

4.0 Propeller Examination

The propeller remained attached to the engine crankshaft flange. The propeller spinner was crushed and exhibited twisting opposite the direction of crankshaft rotation.

The propeller remained attached to the crankshaft and displayed impact damage signatures. The propeller blade marked "A" displayed polishing of the cambered face, and minor aft and twisting deformation. The propeller blade marked "B" displayed polishing of the blade tip and minor aft bending deformation.

One propeller blade was bent aft about 30 degrees at about 8 inches outboard of the hub, was twisted toward the blade face and exhibited leading edge paint abrasion over the length of the blade. The other blade was bent aft about 10° near the tip and exhibited leading edge paint abrasion over the bent section.

Submitted by:

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