

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN23LA418

EXAMINATION SUMMARY

November 16, 2023

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A. ACCIDENT

Location: Gonzales, Texas
Date: September 23, 2023
Time: 1914 central daylight time
Airplane: N18994; Beech C23

B. EXAMINATION SUMMARY

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C. SUMMARY

On September 23, 2023, about 1914 central daylight time, a Beech C23 airplane, N18994, was substantially damaged when it was involved in an accident near Gonzales, Texas. The pilot received minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the pilot, he intended to complete a personal flight to Roger M Dreyer Memorial Airport (T20), Gonzales, Texas. During the final approach to runway 15 he experienced wind shear and elected to go around. He applied full throttle and began to climb out when the engine experienced a loss of power, so he made a forced landing to a field off the left side of the runway. The airplane collided with a fence and a tree, which separated the right wing near the wing root. The pilot added that the fuel tanks contained 46.6 gallons of fuel before takeoff and the accident flight only required about 5 gallons of fuel.

D. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

During the impact sequence the right wing was fracture separated at the wing root approximately two feet outboard of the wing attach fittings. The wing remained near the tree impact. The flap remained with the main wreckage. The right side of the cockpit and cowling sustained impact damage separating the upper cabin skin and deforming the cabin door and door post. The left wing was cut near the root by the recovery crew to facilitate transportation. The horizontal stabilator was removed for transportation. The right main gear remained attached to the fracture separated right wing. The nose and left main remained attached. The pilot did not report flight control abnormalities during the forced landing; therefore, the flight control system was not examined in depth.

In the video provided by the pilot, the fuel quantity system showed 40 gallons at the time of the accident. The right-wing fuel tank was breached during the accident sequence when the wing was impact separated. The left tank was breached along the leading edge a few inches inboard of the fuel cap location. In photographs taken by first responders, fuel can be seen in the left-wing tank. During the examination, the fuel strainer bowl was removed and found to be free of debris or contamination and reassembled. The wing tank finger screens were free from obstructions. The fuel vent lines were examined by passing air and/or a flexible plastic cable through the lines. The right-wing fuel vent plumbing was fracture separated near the outboard rib. The vent system was determined to be free of obstructions. A fuel container with a hose attached was plumbed into each wing fuel outlet fitting at the wing root, one at a time. Fuel was then passed from each wing fitting through the fuel selector and fuel plumbing to the engine driven fuel pump and to the carburetor. The aircraft battery was connected to the airframe terminals and power was supplied to the main bus. The boost pump was satisfactorily tested for operation. There were no restrictions to fuel flow or leaks. The carburetor screen, the fuel strainer screen, and boost pump screen were all free of obstruction or contamination. The fuel selector was removed and disassembled for examination and found to be in normal operating condition. The fuel lines from the fuel selector to the fuel strainer were all removed to inspect for obstructions. A small amount of debris was found in the left fuel line at the selector connection but did not obstruct flow during testing.

2.0 Engine Examination

The engine remained attached to the fuselage via engine mount. The mount sustained minor impact damage in the form of downward bends and kinks to various tubes. Cylinder No. 1 sustained minor impact damage in the form of bent pushrods and cracked cooling fins.

The 2 bladed, aluminum Sensenich propellor remained attached to the engine crankshaft. No oil was noted leaking from the engine and all oil lines appeared tight during the examination. The engine's oil filter was tightly installed, undamaged, and removed from the rear of the engine. The filter was cut open and its filter examined revealing no metal or other debris.

Both magnetos were found tightly installed to the rear of the engine with minor abrasion damage to various ignition leads. The left magneto was a SureFly electronic magneto and found correctly timed to the engine and sparked at all leads when manually rotated and external power applied to the unit. The right conventional magneto produced spark at all leads as when rotated using an electric drill.

All top sparkplugs were removed, and engine rotation was achieved by rotating the propellor in its normal direction of travel. Thumb compression was noted on all 4 cylinders during engine rotation through the top spark plug holes. Valvetrain continuity was confirmed, and all rocker arms were moving during rotation. A lighted borescope inspection of each cylinder revealed no anomalies inside each cylinder to the pistons or valves. All sparkplugs were checked to a Champion Check-A-Plug chart and coloration and wear patterns were found to be consistent with normal engine operation.

The engine driven fuel pump was tightly installed to the accessory section of the engine and pumped fuel as both the propellor was manually rotated and once the pump was removed and tested on a bench under manual actuation. The pump was disassembled and was confirmed to have no debris or tears to any diaphragms inside the pump. The fuel pump activation rod within the engine also moved correctly during engine rotation. The carburetor was found tightly installed to the rear of the engine with its corresponding fuel lines installed. The inlet fuel screen was removed and found to be free and clear of any debris or contamination. The accelerator pump also pumped fuel with manual activation of the throttle arm. Both the throttle linkage and mixture linkage were found secure to the carburetor and moved through their full range of motion via control activation within the cockpit.

The undamaged exhaust system was examined using a flashlight in the tailpipe and a lighted borescope. This inspection revealed a blockage at the joint of the tailpipe and muffler body. A portion of perforated flame tube material was noted lodged within the tailpipe. A grinder was used to cut open the muffler body which revealed a portion of flame tube with a portion of sheet metal attached to it and was blocking at least 95% of the exit path within the tailpipe. The piece of flame tube was lodged in the tailpipe and could not move. An ~3-inch crack was noted on the muffler endcap opposite of the separated flame tube, which allowed light to pass through the crack.

3.0 Propeller Examination

The Sensenich propeller remained attached to the engine. Blade A was bent aft midspan approximately 15 degrees. Red paint transfer was evident on the camber side. Blade B was unremarkable. Neither blade exhibited rotational scoring or leading-edge damage. The spinner exhibited a semi-circular impact on the blade A side.

4.0 Maintenance Information

The airplane maintenance logbooks revealed that during a maintenance inspection on December 24, 1997 (TT: 3,523.42 hours and TSMOH: 1,260.42 hours), the exhaust system was inspected "for leaks and cracks. System found to be satisfactory."

On January 2, 1999 (TT: 3,556.5 hours and TSMOH: 1,293.50 hours), another maintenance inspection was conducted by the same mechanic and there was no mention of the exhaust system.

On March 21, 2000, the airplane's muffler (part number 099001-127) was repaired and inspected by a separate exhaust system repair station. The work order for this muffler repair revealed that the muffler (Beech Sundowner muffler 26 $\frac{3}{4}$ part number 099001-127) was to be inspected and repaired. The items replaced included: 3 tabs, the outer shell, 2 caps, 2 flame tubes, 2 elbows, 2 beaded ends, 2 end plates, and the tailpipe.

On April 1, 2000 (TT: 3,603.36 hours and TSMOH: 1,340.36 hours), another maintenance inspection was conducted by the same mechanic from 1997 and 1999, who "installed serviceable muffler."

There were no additional entries found related to the muffler.

The most recent annual inspection was completed on November 23, 2022, (TT 4,052.8 hours and TSMOH 1,789.8 hours), during which 8 exhaust clamps were replaced and a new exhaust stud was installed on cylinder No. 4. There was no mention of a muffler inspection.

The installed Dynon Avionics revealed that the airplane total time was 4,108.2 hours at the time of the accident. Therefore, the muffler had been installed on the airplane for 504.84 hours.

The Beech maintenance and overhaul documents revealed that the exhaust system should be overhauled or replaced every 800 hours or when the condition warrants replacement. The exhaust muffler and shroud should be inspected every 100 hours. The documentation states, "It is recommended that at each 100 hour and/or annual inspection, all exhaust muffler shrouds be removed and the muffler thoroughly inspected for cracks, leaks and (if applicable) deterioration of the internal tubes which could cause a decrease in engine power due to blockage of the exhaust. Inspection of the heater muffler may be accomplished as follows.

a. The heater muffler should be pressurized to approximately 15 psig and either immersed in water or S 'painted" with soap solution. If any leaks are apparent, the heater muffler must be replaced. Carbon monoxide gas could be introduced into the heater system by leaks, therefore replacement is required.

Submitted by:

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