

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA24FA088

ENGINE AND AIRFRAME EXAM

January 17, 2024

A. ACCIDENT

Location: Leyden, MA
Date: January 14, 2024
Time: 1125 EST
1625 UTC
Airplane: N7345R, BE-55

B. ENGINE AND AIRFRAME EXAM

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C. SUMMARY

On January 14, 2024, at 1125 eastern standard time, a Beechcraft 95-B-55 twin-engine airplane, N7345R, was substantially damaged when it impacted terrain near Leyden, Massachusetts. The flight instructor, commercial pilot, and the passenger were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

A preliminary review of Automatic Dependent Surveillance–Broadcast (ADS-B) radar data revealed that the airplane departed runway 20 at Westfield-Barnes Regional Airport (BAF), Westfield/Springfield, Massachusetts, about 1106. After departure, the airplane made a 180-degree left turn toward the north-northeast. The airplane then climbed to about 3,000 ft mean sea level (msl) and made four alternating 360-degree turns while continuing to fly northbound. After the fourth 360-degree turn, the airplane began to climb, reaching an altitude of about 4,000 ft msl. The airplane then entered a rapid descent until data ended at 1125. The last recorded radar point was coincident with the accident site.

A witness was walking his dog in a field on his property when he first heard the airplane's engines and looked up. He said the airplane was "trying to gain altitude" "then stopped" before the nose of the airplane dropped and "made a straight line" toward the ground. The airplane "corkscrewed" straight down and went out of view. The witness said that he saw no attempt by the pilot to pull the airplane out of the spin. The witness said the airplane, which he estimated was about $\frac{3}{4}$ -mile away from him, descended "fast." From the time he first observed the airplane until it went out of site was about 8 seconds. He described the weather conditions as very windy (and cold), but it was not snowing, and the visibility was good. It was not snowing.

AIRPLANE INFORMATION

The Beechcraft 95-B55 is six-seat, twin engine airplane that is powered by two Continental IO-470-L reciprocating engines. A review of the airplane's maintenance records revealed the last annual inspection was completed on September 1, 2023. At that time the total time airframe was 5,283.8 hours.

WRECKAGE INFORMATION

The airplane impacted terrain located in the Leyden Wildlife Management Area. The wreckage came to rest in a clearing on a shallow hill on a magnetic heading of about 260 degrees. All major components of the airplane were located at the accident site and there was no postimpact fire. The disposition of the wreckage was consistent with the airplane landing in a relatively flat position with little forward movement. Both wings, along with their respective engines and propeller systems, remained attached to the fuselage. The right wing impacted a tree about mid-span. The tail section was partially separated from the empennage but remained attached via control cables.

A review of photos taken by the Massachusetts State Police upon their arrival on-scene within an hour or so of the accident, revealed airframe icing on the airplane's left wing, left engine cowling and nose/nose baggage area.

An on-scene investigation was conducted by the NTSB the following morning on January 15, 2024. The airplane was covered with a light coating of dry snow due to snow squalls that had moved through the area shortly after the accident. Once the snow was brushed away, airframe icing was observed on the leading edge of both horizontal stabilizers, the leading edge of the rudder and both the left and right wings. Airframe ice was also observed on the left and right engine cowlings, and the front face of one propeller blade on the left engine. Ice was also observed on the nav antennas located on the vertical stabilizer.

The top portion of the cabin area had been peeled back by rescue personnel to recover the three occupants.

The landing gear and flaps were found retracted, which was also confirmed by their respective actuator extension measurement/position. The aileron trim tab was measured to be 0 degrees/neutral; elevator trim tab was 2 degrees tab up on the left and 5 degrees tab up on the right. The right elevator was partially separated from the right horizontal stabilizer. The rudder trim tab was 4 degrees tab right.

Flight control continuity was established from the flight control surfaces to their respective controls in the cockpit. The right rudder cable and trim cable were found broken in tensile overload and exhibited broomstraw fractures. The flap shaft cables from the motor to the flap actuators was also confirmed.

Both wings sustained impact damage and both fuel bladder tanks were breached, and empty of fuel.

The fuel selector valves and handles were found and verified to be in the "on" position. The fuel strainers were not accessible to the position of the wreckage. Fuel system continuity was established from each fuel selector to their respective engine driven fuel pump lines at the firewall. No obstructions were noted. Fuel was observed exiting the engine driven fuel pump line at each respective engine nacelle when air was applied at the left and right fuel selector valves.

The airplane was equipped with a de-ice/anti-ice system. The windshield and both propeller systems had anti-icing (alcohol) systems. The windshield sustained impact damage and the system could not be examined. Both wings, both horizontal stabilizer, and the vertical stabilizer were equipped with de-ice inflatable/pneumatic ice boots. The system could not be examined due to impact damage.

The surface de-ice switch is a momentary switch and did not have a on/off position. It is a one-time cycle. The prop anti-ice/pitot heat/ice detect light switches were impact damage. The windshield anti-ice switch was in the "off" position.

Both front (pilot) seats were equipped with a three-point seatbelt/shoulder harness system. First responders confirmed that both front seat occupants were wearing their respective seatbelt/shoulder harness. The rear seat passenger seats had a lap-belt only. It was not confirmed if the passenger was wearing her seatbelt.

The autopilot and trim switches were in the off position

The right engine and its respective two-bladed propeller system were examined as one unit. One propeller blade was straight/undamaged, and the other was bent aft and only exhibited a dent about mid-span on the trailing edge.

The engine driven fuel pump was removed from the engine, and it rotated freely. The unit was disassembled, and the drive coupling was intact. Fuel was observed in the pump and fuel lines. The fuel was light blue in color and appeared absent of debris and water. The throttle body butterfly valve was found in the low to mid RPM position, which was consistent with the throttle control lever arm. The mixture control lever arm was in the near idle-cutoff position. The fuel metering valve inlet screen was absent of debris. The top spark plugs, and valve covers were removed, and the engine was rotated manually via the propeller. Thumb compression was established for each cylinder and valve train continuity was established on each cylinder. The oil pump and vacuum pump were also observed rotating which established continuity to the aft accessory section. Both magneto couplings were heard snapping and spark was established to each ignition lead. The lower spark plugs were then removed. The top/bottom spark plugs exhibited normal wear as per the Champion Check-A-Plug chart. The fuel injector nozzles were removed and were clear of debris. The vacuum pump was removed from the engine and disassembled. The drum/vanes were intact. The oil filter was full of oil and the filter was absent of any debris/metallic particles. The fuel manifold valve was disassembled, and light blue colored fuel was found in the valve/bowl. The screen was absent of debris. Water finding paste was used and no water was detected in the fuel.

The left engine and its respective two-bladed propeller system were examined as one unit. Both propeller blades were straight/undamaged. One blade had a small dent on the trailing edge of the blade about mid-span.

The engine driven fuel pump was removed from the engine, and it rotated freely. The unit was disassembled, and the drive coupling was intact. Fuel was observed in the pump and fuel lines. The fuel was light blue in color and absent of debris and water.

The throttle body butterfly valve was found in the low to mid RPM position, which was consistent with the throttle control lever arm. The mixture control lever arm was in the near idle-cutoff position. The fuel metering valve inlet screen was absent of debris. The top spark plugs, and valve covers were removed, and the engine was rotated manually via the propeller. Compression was established for each cylinder and valve train continuity was established on each cylinder. The oil pump and vacuum pump were also observed rotating which established continuity to the aft accessory section. Both magneto couplings were heard snapping and spark was established to each ignition lead. The lower spark plugs were then removed. The top/bottom spark plugs were exhibited normal wear as per the Champion Check-A-Plug chart. The fuel injector nozzles were removed and were clear of debris. The vacuum pump was removed from the engine and disassembled. The drum/vanes were intact. The oil filter was full of oil and the filter was absent of any debris/metallic particles. The fuel manifold valve was disassembled, and light blue colored fuel was found in the valve/bowl. The screen was absent of debris. Water finding paste was used and no water was detected in the fuel.

Submitted by:

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