



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

DATE August 29, 2019

AIRFRAME AND ENGINE EXAMINATION

WPR19FA246

This document contains 12 embedded photos.

A. ACCIDENT

Location: St. Ignatius, MT.

Date: August 29, 2019

Aircraft: Beech BE-33 Debonair / N9529Y

B. EXAMINATION PARTICIPANTS:

Name: Fabian Salazar
Duty Position: IIC
National Transportation Safety Board
Federal Way, WA 98003

Name: Casey Stevens
Duty Position
Federal Aviation Administration
City Helena FSDO
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Name: Jennifer Barclay
Duty Position: Air Safety Investigator
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Name: Christopher Lang
Duty Position: Air Safety Investigator
Organization: Continental Aerospace
City, State, Zip: Mobile, AL.

C. SUMMARY

Examination of the airframe and engine was conducted at the accident site in St. Ignatius, MT. on August 30, 2019. No evidence of mechanical anomalies or malfunctions were found that would have precluded normal operation.

D. DETAILS OF THE INVESTIGATION

The NTSB launched to the accident site along with Party representation from Textron, Continental Engines and the Federal Aviation Administration (FAA)

WRECKAGE AND IMPACT INFORMATION

AIRFRAME

The airplane came to rest inverted in a flat hay field. The belly of the airplane displayed dents and tears and oil streaks throughout the bottom of the airplane. The airplane was flipped over during the examination.

Fuselage Right Side. The forward half of the cabin, the portion above the front seats, and the right door had separated from the fuselage exposing the inner cabin area. Fragments of the window supports remained attached to the right side. The right wing remained attached to the fuselage at the root. The outboard wing tip to about 30 inches inboard, was bent aft and downwards. The right aileron remained attached to the wing at the hinges and displayed damage throughout its span. The aileron appeared to be in a neutral position. The right flap remained attached to the wing at the hinges and displayed damage throughout its span. The flap was found in the up position. The right fuel cap was found secured in the port. The rubber seal was soft and pliable. Residual fuel found in the tank tested negative for water.

The right-side access door remained attached to the fuselage at the hinge and was found open. The fuselage was buckled inwards just aft of the rear window. The buckling continued upwards to the top of the rear portion of the cabin. The aft fuselage displayed dents and wrinkles back to the empennage.

Empennage. The right horizontal elevator remained attached to the fuselage at its mount and displayed damage at the tip, with wrinkling and dents along the span. The right elevator displayed damage at the outer tip. The counterweight was separated and found in the debris field. The right trim tab remained attached to the elevator and appeared in a neutral position. The vertical fin remained attached to the fuselage. A portion, from the root to about 18 inches up, had separated and found near the power lines. The lower half of the rudder remained attached to the fuselage. The left horizontal elevator remained attached to the fuselage. The left horizontal stabilizer displayed damage at the tip and aft bending with wrinkling and tearing of the sheet metal on the top side near the root. The left elevator had separated from the horizontal stabilizer at the hinges.

Fuselage Left Side. The left-aft fuselage displayed wrinkling and buckling forward to the rear-passenger window. Aft of the rear passenger window was a tear in the sheet metal that exposed the aft storage area.

Left Wing

The entire left wing separated from the fuselage. The outboard 4 feet of the left wing separated from the wing and was found in the vicinity of the power lines, about 800 ft away. The separated portion of the wing displayed striations consistent with the size and diameter of power

transmission lines found nearby. The remaining section of left wing was found near the fuselage. The left aileron separated and was located near the outer portion of the wing near the power lines. A small portion of the aileron remained attached to the wing at the outer hinge. The left cabin area of the fuselage was crushed downward. The windscreen and left window separated.

The instrument panel, instruments and associated wiring was damaged and present at the front of the fuselage in the vicinity of the firewall. Instruments and radios separated from the instrument panel and located around the wreckage.

The top of the cabin area was separated from the fuselage exposing the cabin area. The left and right forward seats remained in their tracks. The left pilot's seat

The engine, model IO-470-N (1) Serial number: 096522-R, separated from the fuselage at the firewall and was located about 50 feet ahead of the fuselage, fight side up. The six cylinders remained attached to the engine block. The left magneto remained attached to the engine at its mount. The right magneto had partially separated from its mount. Both magnetos produced spark when rotated by hand.

The fuel nozzles displayed damage to all but number 1, 3 and 5. The damage was consistent with the accident. The fuel pump remained attached at its mount. Examination revealed normal operation when rotated by hand. The fuel distributor (fuel manifold) was examined. The diaphragm was intact, the retaining nut and plunger were normal. The fuel screen was not obstructed.

Throttle and mixture controls were damaged but moved through their normal travel.

The left-side three cylinders (2, 4, and 6) had damage that exposed the rocker arms and valve springs of each cylinder. The spark plug leads were separated from the sparkplugs on the left side. Borescope examination of the cylinders was normal.

Valve train continuity was established, and thumb force compression was noted on all cylinders.

The landing gear displayed evidence of being retracted. The left main landing gear separated from the wing and was found in the wreckage, under the right wing. The nose gear separated and was located near the empennage. The right main landing gear remained secured in the retracted position in the right wing.

The two forward seats remained attached to their seat rails. The seat belts for the two front seats and the bench were cut by first responders. Usage of the seat belts by the occupants was established by photo examination.

The airplane was equipped with a Narco ELT-10. The ELT separated from the airplane and located in the debris field.

The cabin area displayed damage throughout. The fuel selector switch was found in the left tank position.

The three-blade propeller separated from the engine and was located about 50 feet from the fuselage. All propeller blades displayed S-bending and twisting, along with gouges and scratches and throughout the span of the blades. The spinner was crushed to the propeller hub.

PHOTO EXHIBIT



Photo 1. N9529Y, as found after the accident.



Photo 2. N9529Y, front view after the airplane was turned right-side up.



Photo 3. N9529Y, right-side view.



Photo 4. N9529Y, rear view.



Photo 5. N9529Y, left-side view.



Photo 6. Left outboard section of wing and aileron.



Photo 7. Propeller, hub, and spinner.



Photo 8. Portions of the Vertical stabilizer, rudder, and cap.



Photo 9. Engine As found, upside down, front view.



Photo 10. Engine, upside down, right-side view.



Photo 11. Engine, upside down, left view.



Photo 12. Engine, upside down, rear view.