



AIRFRAME AND ENGINE EXAMINATION FACTUAL REPORT

NTSB ACCIDENT NUMBER: ERA18FA114

ACCIDENT DATE: March 25, 2018

ACCIDENT LOCATION: Hydro, Oklahoma

AIRCRAFT REGISTRATION/ TYPE: N7019N, Beech V35A

NTSB Investigator-in-Charge - Adam Gerhardt (Air Safety Investigator)

Investigative Party Members:

FAA Coordinator – James Wirt (Oklahoma City FSDO)

Textron Aviation – Henry Soderlund (Senior Air Safety Investigator)

Continental Motors – Kurt Gibson (Air Safety Investigator)

BRIEF NARRATIVE

On March 25, 2018 about 2137 central daylight time, a Beech V35A airplane, N7019N, was destroyed when it impacted terrain while enroute near Hydro, Oklahoma. The commercial pilot and passenger were fatally injured. Night instrument meteorological conditions prevailed in the vicinity, and no flight plan was filed. The flight originated from Odessa Airport-Schlemeyer Field (ODO), Odessa, Texas, about 1947 and was destined for El Reno Regional Airport (RQO), El Reno, Oklahoma. The flight was conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91.

BASIC AIRCRAFT INFORMATION

The airplane was a Beech V35A, N7019N, S/N D-8619, manufactured in 1967. It was powered by a Continental IO-520-BAcBB engine.

INVESTIGATION INFORMATION

The airplane was examined on-site the day after the accident by an Oklahoma City Flight Standards District Office (FSDO) FAA inspector. On March 27, 2018, the investigative team, which included; the NTSB investigator-in-charge (IIC), an NTSB investigator observer, 3 FAA inspectors, an investigator from Continental Motors, and an investigator from Textron Aviation, examined the airplane at the accident site. The team continued the on-site examination on March 28, 2018 and concluded later that day. The airplane was subsequently transported to a storage facility in Dallas, TX. The wreckage was released on July 17th, 2018 to the owner.

ACCIDENT SITE OVERVIEW

The accident site was located in a flat open cotton field. The main wreckage was located at 35.454323 N, -98.562816 W, about 1,670 ft mean sea level. The initial impact point was identified as a large impact crater in the dirt, located at 35.454204 N, -98.563415 W. The wreckage path from the initial impact point to the main wreckage was on a 050°-060° true heading. The main wreckage was found upright and the at rest heading was 060°. A small, post-impact fire occurred where the right wing came to rest. The main wreckage was found about 230 ft forward of the initial impact point. The engine had separated from the engine mounts and was found about 220 ft forward of the main wreckage at 35.454716 N, -98.562218 W, about a 050° heading from the main wreckage.

AIRFRAME EXAMINATION

The airframe and engine were found past the initial impact point. The empennage remained attached to the fuselage. Flight control cable continuity was established from the control surfaces of the ailerons, elevator, and rudder, to the cockpit. The elevator trim actuator was found at one inch, which corresponds to neutral trim. The left wing remained attached to the fuselage. The right wing outboard 4 ft section separated from the wing and was found in the debris field.

The left and right flap actuators were found in the retracted position. The flap handle was found in the retracted position. The nose and right main landing gear separated from the airframe and were both found in the debris field. The left main landing gear remained attached to the airframe. The landing gear selector was found in the retracted position. The nose and main landing gear actuator were found in the retracted position. The cabin heater selector was found in the off position.

The fuel strainer screen and fuel strainer bowl were found clean. The fuel selector handle and valve were found selected to the right fuel tank. The emergency locator transmitter was found attached to the fuselage. When examined, the unit was found intact, and subsequently disassembled, and the unit did not contain a battery.

The airplane was equipped with five seats. The front two seats were found separated from the airframe in the debris field. One front seat lap belt was found buckled with its attached point stitching ripped on one side. The other front seat lap belt was found unbuckled, with one of its attach points stitching ripped. The number 5 passenger seat was the only seat that was found attached to the airframe. The airplane was not equipped with shoulder harnesses.

The cockpit instrument panel, navigation, and communication instruments were damaged during the impact. The altimeter was found in the debris field. The barometric pressure setting as found was 29.82, which was consistent with nearby weather reporting stations. The heading indicator was found in the debris field, and as found displayed 060°. The heading bug was found set to 150°. The gyro rotor housings separated from the attitude indicator and heading indicator and were both found in the debris field. When both housings were opened, both rotors exhibited evidence of rotational scoring, as did their respective housing. The electrical switch positions could not be determined due to the impact damage.

The tachometer was found indicating 1700 rpm, with a tachometer time of 2583.17. The throttle lever and mixture control lever were found full forward and bent. The propeller control lever was found pulled out (aft).

ENGINE EXAMINATION

Basic Engine Information:

Engine Model: IO-520-BAcBB

Engine Serial Number: 1215097B

Engine Assembly Date: 06/28/1967

Specified horsepower for IO-520- BAcBB: 285-horsepower

The engine had sustained a significant amount of impact damage; there was no thermal damage noted to the engine. The propeller flange remained attached to the crankshaft and a portion of the propeller hub remained attached to the propeller flange. The crankcase displayed a significant amount of impact damage concentrated to the bottom and rear of the crankcase. Many of the engine accessories had broken free from the engine.

During a postaccident engine examination, the crankshaft was rotated by hand and valve train continuity was established, and all pistons operated normally. Each spark plug displayed varying degrees of impact damage; the top spark plugs were visually inspected, and normal operating and combustion signatures were observed. The cylinders were inspected using a lighted borescope; the cylinder bore, piston faces, and valve heads displayed normal operating and combustion signatures.

The fuel manifold valve and fuel nozzles were examined, and no debris was observed. Numerous engine accessories separated from the engine and were found in the debris field. Both magnetos separated from the engine and were found capable of producing spark when rotated by an electric drill.

The vacuum pump remained attached to the engine and displayed impact damage signatures. The vacuum pump was removed, and it was noted that the shear coupling remained intact. The vacuum pump was disassembled, and it was noted that the rotor was impact damaged.

The fuel pump had broken free from the engine and was located in the wreckage. The fuel pump displayed impact damage signatures; the fuel pump drive coupling was not located at the time of on scene examination.

The oil pump housing remained attached to its installation point; however, that portion of the crankcase had broken free from the rest of the crankcase. The oil pump drive gear was visible and displayed normal operating signatures. The oil sump was destroyed by impact forces. There were no anomalies noted with the small portions of oil sump that were located. The oil filter remained attached to a portion of the oil filter adapter; however, the attachment point had broken free from the rest of the oil filter adapter. The oil filter housing was cut open and the filter pleats were visually inspected. There were no anomalies noted with the oil filter inspection. The oil cooler had broken free from its installation point and displayed impact damage signatures. There were no anomalies noted with the oil cooler

The exhaust system displayed a significant amount of impact damage signatures in the forms of crushing, bending, and tearing. There were no anomalies noted.

The starter adapter remained attached to its attachment point; however, the portion of crankcase had broken free from the rest of the crankcase. The adapter displayed impact damage signatures. There were no anomalies noted with the adapter.

The alternator sustained a significant amount of impact damage signatures. Several portions of the alternator were found along the wreckage path; there were no anomalies noted with the located portions of the alternator.

All three propeller blades had broken free from the propeller hub and displayed impact damage signatures. Each propeller blade displayed varying amounts of S-bending, blade polishing, leading edge gouging, and twisting deformation.

The examination of the wreckage did not reveal any anomalies consistent with a preimpact failure or malfunction.