



NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety

Wreckage Examination Report

July 21, 2022

A. ACCIDENT WPR22LA196

Location: Oroville, California
Date: June 22, 2022
Time: 1218 PDT
Operator: Private
Aircraft: Beechcraft 19A Musketeer
Registration: N7641R

B. SUMMARY

On June 2, 2022, about 1218 Pacific daylight time, a Beechcraft 19A Musketeer airplane, N7641R, was substantially damaged when it was involved in an accident near Oroville Municipal Airport (OVE), Oroville, California. The pilot and pilot-rated passenger were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to a video of the accident flight captured by a witness, who was also a student of the accident pilot, the pilot and passenger completed an engine run-up and subsequently taxied to runway 13 where they began a ground run. The engine sounded smooth and continuous as the airplane lifted off the runway in about 1,300 ft and transitioned into a climb. Approximately fifteen seconds later the airplane began to descend. The airplane started another climb about four seconds later, which was immediately followed by a right turn. The airplane's rate of turn began to increase during the turn at which time the video ceased. The witness reported that the airplane impacted the ground seconds after he terminated the video to assist the occupants of the airplane.

The witness reported that he flew the accident airplane with the pilot about 2 weeks prior to the accident. After an uneventful preflight inspection and engine run-up they taxied to runway 31 where they began a ground run. They performed two attempted takeoffs and aborted both due to performance issues. According to the witness, the pilot and pilot-rated passenger had planned to fly the airplane on the day of the accident to troubleshoot the performance deficiency.

The airplane came to rest in an approximately 40° nose down attitude on a heading of about 097° magnetic, about 500 ft south of the departure end of runway 13. All major structures were accounted for at the accident site. The left wing remained attached to the fuselage, and the right wing was partially separated at the wing root. The fuselage frame was deformed about midspan and the tail was canted slightly left of the fuselage. Both the stabilator and rudder remained connected to the empennage at their attachments. The engine remained attached to the engine firewall, which was wrapped around the engine accessory case. Both propeller blades remained attached to the propeller hub, which was still connected to the engine crankshaft.



Photograph 1: Accident site from the southeast

C. DETAILS OF THE INVESTIGATION

The airplane was recovered to Air Transport in Phoenix, Arizona where an examination was completed on July 21, 2022.



Photograph 2: Accident airplane prior to examination

C.1 Airframe Examination

C.1.1 Fuel System

Continuity of the fuel system was traced from a fractured line at the right wing root to the fuel selector and from the left wing root to the fuel selector. The fuel selector was found in an intermediate position between the OFF and RIGHT fuel tank positions. The cockpit floor at the fuel selector displayed upward bending in a photograph taken at the accident site (see photograph 3). The fuel selector was removed from the cockpit and disassembled during the postaccident wreckage examination. The selector moved throughout each of the 4 detents (RIGHT, LEFT, OFF, and OFF) with resistance. Disassembly of the unit revealed metallic particles along the circumference of the LEFT, RIGHT, and ENGINE ports, but none of the ports were obstructed. The selector was an OEM product.

An internal examination of the left wing revealed dirt along the outer shroud of the fuel screen, but was free from internal obstructions.



Photograph 3: Fuel selector at accident site



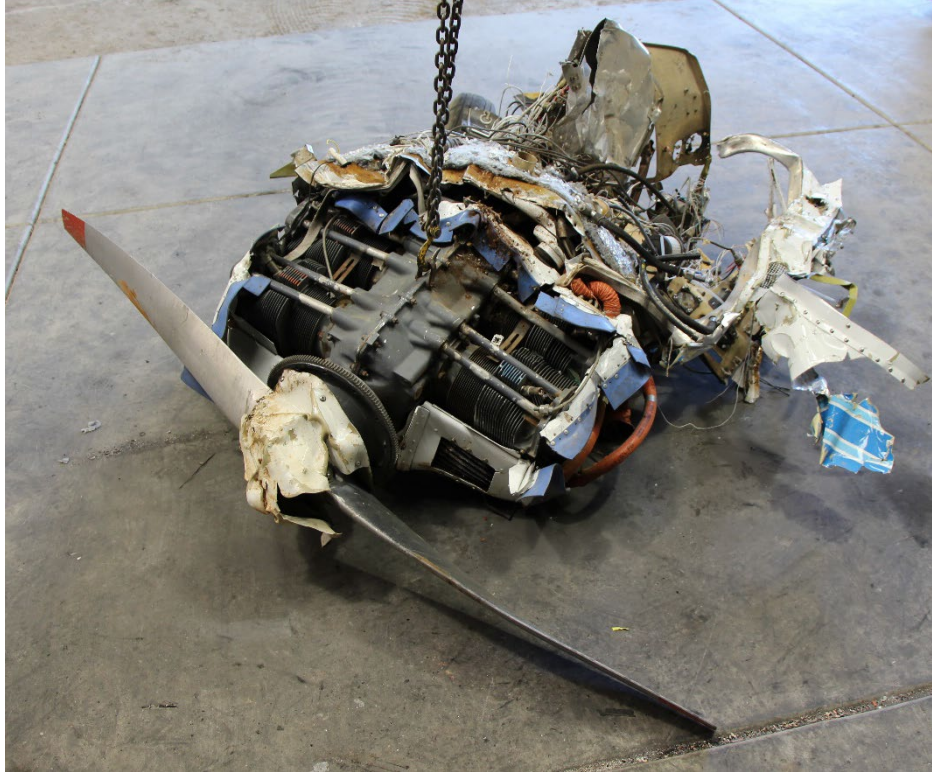
Photograph 4: Engine port with particles



Photograph 5: Left fuel tank fuel screen

C.2 Engine

The engine was a Lycoming Engines O-320-E2D, s/n L-24111-27A, an air-cooled, 160 hp reciprocating engine. The engine was converted from 150 hp through supplemental type certificate, SE3692SW-D. The engine baffling was damaged. The left side muffler was crushed and the right side muffler sustained impact damage. The engine flywheel was fractured. The accessories remained attached to the engine case. The no. 1, 2, and 3 exhaust tubes were damaged.



Photograph 6: Engine prior to examination

Mechanical continuity was established throughout the rotating group, valve train and accessory section as the crankshaft was manually rotated at the accessory case with a hand tool. Thumb compression was obtained in proper firing order at all four cylinders and the valves displayed normal lift when the crankshaft was rotated. Examination of the cylinders combustion chamber interior components using a lighted borescope revealed normal piston face and valve signatures, and no indications of catastrophic engine failure, detonation, or foreign object ingestion.

Both magnetos were securely clamped at their respective mounting pads. The left magneto was a Slick Aircraft Products model no. 4371. The right magneto was a Slick Aircraft Products model no. 4370. The magneto to engine timing was approximately 25° BTDC. The magnetos were timed within 1° of each other. Each of the ignition harness B nuts were secured at their respective spark plugs. The top ignition harness coils to cylinder nos. 2 and 4 were separated at their spark plugs. Both magnetos were subsequently removed and the ignition leads were cut. The left magneto impulse coupling was heard as the gear was rotated by hand. Spark was observed at the cut ends of all 8 ignition harness leads as each magneto was rotated by hand. The top spark plugs were manufactured by Tempest, model UREM 40E massive electrode plugs. Each of the 4 spark plugs exhibited normal wear and were free of mechanical damage.



Photograph 7: Top spark plugs

The fuel line B nuts remained secure at their respective fittings. The carburetor bowl had separated, but the upper half of the carburetor was attached to the mounting pad of the plenum and the throttle and mixture controls remained secure at their respective control arms of the carburetor. The castellated nut and serrated interface at the throttle arm remained secure and properly engaged. The mixture and throttle control cable clamps remained securely clamped at their respective hardware locations. The carburetor fuel inlet screen was free of visible contaminants. The carburetor throat remained free of obstruction to airflow.

The fuel pump flange remained secure at the mounting pad. The fuel pump had been displaced due to the absorption of impact energy. The fracture surfaces exhibited appearances consistent with overload. The fuel pump was disassembled and the diaphragm remained intact and pliable and there was no visible evidence of contamination. The check valves remained secure.

The induction system foam filter was intact and did not contain any obstructions.

The mufflers internal baffles were continuous and exhibited coloration consistent with normal operation. There was no evidence of oil residue in the exhaust system gas path.

The oil suction screen contained some non-metallic fragments with few magnetic fragments.



Photograph 8: Oil suction screen and particles



Photograph 9: Oil suction screen particles removed from screen

The two bladed fixed pitch propeller remained attached at the crankshaft flange. Both blades remained attached to the hub and the metal propeller spinner was crushed. The blades remained continuous from tip to tip. The propeller remained undamaged.



Photograph 10: Two bladed propeller