NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Washington, DC 20594

SUMMARY OF AIRCRAFT EXAMINATIONS

-- CEN22FA203 --

A. OVERVIEW

On May 17, 2022, about 1751 central daylight time a American Aviation AA-1A, N6409L, was destroyed when it was involved in an accident near Cleburne, Texas. The student pilot sustained fatal injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

B. PARTICIPANTS

Representatives from the NTSB, FAA, and Lycoming Engines participated in a wreckage examination on-site and at the recovery location.

C. SUMMARY OF EXAMINATIONS

The airplane impacted a grassy field in a rural, residential area with a nose down attitude and minimal forward momentum (see Photo 1). The airplane came to rest upright on a northwesterly heading, with both wings crushed downward. The tail section was twisted slightly to the right of the fuselage as viewed from the rear of the airplane.

Photo 1 – Accident Site

Summary of Aircraft Examination

Two propeller strike ground scars were located immediately in front of the wreckage. The two ground scars were about 3 ft apart and the largest ground scar was about 9 inches deep.

Photo 2 – Propeller Ground Scar After Wreckage Debris was Removed

One propeller blade was slightly twisted and bent aft. The other propeller blade was bent slightly forward. Both blades had polishing and chordwise scratching.

Six empty mini alcohol bottles (approximately 1.5 fluid ounces each) were found in the glove box.

All flight control surfaces were accounted for at the accident site. Flight control continuity was confirmed for the elevator, ailerons, and rudder from the respective control surfaces to the cockpit. The wing flaps were in the retracted position.

Fuel was observed to be leaking from both fuel tanks. The carburetor was disassembled. One of the brass floats exhibited hydraulic crushing. The carburetor float mechanism operated normally and no anomalies were noted with the needle valve. The carburetor fuel inlet fitting was broken free from carburetor. The inlet screen was found to be clear of debris.

The electric fuel pump outlet line was fractured. The electric pump filter was found clear of debris. Fuel was observed in the fuel line between the electric and engine driven fuel pumps.

Summary of Aircraft Examination

The propeller remained attached to the crankshaft flange, which was bent. The flywheel was found fractured. The propeller was removed to facilitate the examination of the engine.

The crankshaft was rotated by hand via the crankshaft flange. "Thumb" compression was observed in proper order on all four cylinders. The valve train was observed to operate in proper order and appeared to be free of any pre-accident mechanical malfunction. Normal "lift action" was observed at each rocker assembly. Clean, uncontaminated oil was observed at all four rocker box areas. Mechanical continuity was established throughout the rotating group, valve train and accessory section during hand rotation of the crankshaft.

The combustion chamber of each cylinder was examined through the spark plug holes utilizing a lighted borescope. The combustion chambers and bottom spark plug electrodes remained mechanically undamaged and there was no evidence of foreign object ingestion or detonation. The valves were intact and undamaged. There was no evidence of valve to piston face contact observed. The gas path and combustion signatures observed at the combustion chambers and exhaust system components displayed coloration consistent with normal operation.

The ignition harness sustained substantial impact damage. The magnetos were removed for examination. Each magneto produced spark at the end of their respective spark plug leads, during rotation of the drive. The drives of each magneto remained intact and undamaged.

The spark plugs were removed, examined and photographed. The spark plug electrodes remained mechanically undamaged, and according to the Champion Spark Plugs Check-A-Plug chart AV-27, the spark plug electrodes displayed darker coloration consistent with rich mixture operation.

The oil suction screen was found to be clear of debris. The oil cooler was crushed due to impact.

The muffler shroud was removed, with no anomalies noted.

There was no evidence of pre-impact mechanical malfunctions observed during examinations of the engine and airframe.

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