

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

SUMMARY OF AIRCRAFT EXAMINATION

-- CEN18LA125 --

A. ACCIDENT

Location: Beggs, Oklahoma
Date: March 21, 2018
Time: 1745 central daylight time
Aircraft: Cub Crafters PA18-150 (s/n 9965CC), N226JK

B. PARTICIPANTS

Timothy Sorensen
Senior Aviation Accident Investigator
National Transportation Safety Board
Denver, Colorado

C. ACCIDENT SUMMARY

On March 21, 2018, about 1745 central daylight time, a Cub Crafters PA18-150 airplane, N226JK, experienced a loss of engine power after takeoff from runway 36 (1,800 ft by 50 ft, asphalt) the Eagle Creek Airport (51OK), Beggs, Oklahoma. The pilot sustained a minor injury; the passenger was not injured. The airplane was substantially damaged. The airplane was registered to and operated by the pilot as a Title 14 *Code of Federal Regulations* Part 91 flight. Day visual meteorological conditions prevailed. The flight was not operated on a flight plan. The local flight was originating at the time of the accident.

D. GENERAL DESCRIPTION

Airframe

The Cub Crafters PA18-150 is a high-wing, single-engine airplane, with a two-place, tandem seating arrangement and a conventional (tailwheel) landing gear configuration. The airplane is certificated in the normal and utility categories.

Summary of Aircraft Examination

D. GENERAL DESCRIPTION *(concluded)*

Engine Assembly

The Lycoming O-360-C4P engine is capable of producing 180 horsepower at 2,700 rpm. The engine is a four-cylinder, horizontally opposed, air cooled, direct drive, normally aspirated, reciprocating design configuration.

Propeller Assembly

The McCauley 1A200/FA8241 propeller assembly is a two-blade, fixed pitch design, fabricated from aluminum alloy.

E. DETAILS OF AIRCRAFT EXAMINATION

The post-recovery examination was conducted on May 30, 2018, at Dawson Aircraft, Clinton, Arkansas.

F. DESCRIPTION OF ACCIDENT SITE

The airplane came to rest in an open grass area near the arrival threshold of runway 8.

G. SUMMARY OF AIRCRAFT EXAMINATION¹

Airframe – Cub Crafters PA18-150, s/n 9965CC

Based on information provided by the recovery operator, the airplane came to rest upright and the landing gear had collapsed. The left wing struts were buckled. The left wing was deformed near midspan. The right wing was deformed near midspan and the wingtip exhibited impact damage near the leading edge.

At the time of the examination, the airframe was supported on a trailer. The wings and horizontal stabilizers had been removed to facilitate recovery. The wings were not examined. The flight control system was not evaluated.

The lower portion of the engine cowling exhibited upward crushing/impact damage. The engine was displaced upward and to the left. The firewall and lower fuselage structure were deformed. The left side of the fuselage exhibited damage to the structural tubing near the cabin and baggage compartment. The right side fuselage structure appeared undamaged. The aft fuselage and vertical stabilizer appeared intact. The rudder remained attached and appeared undamaged. The tail wheel remained attached to the aft fuselage; although, it was displaced to the left. The upper wing mounting points and the lower wing strut mounting points appeared undamaged.

The fuel selector appeared undamaged and was free to rotate. All detents were functional. The mating fuel lines were securely attached to the selector housing. Selector function and fuel line continuity was verified with compressed air. The selector functioned normally at all positions (both, left, right, off). The fuel lines from the left and right wing roots to the selector were intact. The fuel line from the selector to the firewall and gascolator was intact.

The tachometer indicated 0958.4 hours at the time of the post-recovery examination.

¹ Directions related to accident site placement and component damage/deformation are with respect to an intact airframe unless otherwise noted.

Summary of Aircraft Examination

G. SUMMARY OF AIRCRAFT EXAMINATION *(continued)*

Engine – Lycoming O-360-C4P, s/n L-39243-36A

The engine remained attached to the engine mount at all four attachment points. The mount was deformed; two tubes – one common to the upper left attachment point and one common to the lower right attachment point – were separated consistent with overstress failures.

The engine control cables remained attached to the carburetor and the air intake. The throttle and carburetor heat cables were continuous to the cockpit controls. Movement of each control was observed at the engine. The mixture cable was continuous; however, the cable was kinked and bounded due to the displacement of the engine. The cable was cut immediately above that point; movement to the cockpit control was confirmed to that point.

The air filter assembly and air intake were crushed upward. They remained securely attached to the carburetor. The air filter element appeared clean and free of debris. The carburetor was displaced and partially separated from the engine. The carburetor housing was damaged. The throttle lever rotated with difficulty due to contact between the butterfly valve and the housing. The mixture control lever was free to rotate. The carburetor was disassembled. The venturi and fuel discharge nozzle appeared intact. The floats and needle valve appeared undamaged. The accelerator pump mechanism appeared intact. The housing cavity was free of debris or sediment.

The gascolator remained attached to the firewall; however, it was damaged consistent with the surrounding airframe impact damage. The bowl was intact and free of debris or sediment.

The engine assembly appeared undamaged with the exception of the carburetor mounting studs. The intake manifold appeared intact and remained securely attached at all cylinders. The exhaust manifold remained securely attached at all cylinders. The exhaust manifold was locally deformed and exhibited a crack common to a weld near the no. 2 cylinder. A local deformation was co-located with the crack consistent with impact damage. The fuel primer lines appeared intact and securely attached. The starter ring was securely attached and appeared undamaged.

The crankshaft was free to rotate. Compression/suction was obtained on all cylinders during crankshaft rotation. Normal valve operation was observed. The rocker arms and valve springs appeared intact and were oil wetted. The oil screen was obstructed by the engine mount due to the displacement of the engine; it was not removed. Oil recovered during the examination appeared free of contamination or debris. The oil sump remained securely attached to the crankcase and appeared undamaged. It was not removed.

The left magneto remained attached to the engine. The right magneto had separated from the engine mounting pad and was located immediately adjacent to its installed position. The lower portion of the housing mounting flange was fractured consistent with impact. (Rotation of the accessory section drive gear was confirmed during the engine continuity portion of the exam.) The spark plugs were intact and exhibited normal operating signatures. Rotation of each magneto drive provided a spark at all spark plugs, with exception of the no. 1 cylinder upper plug. Further examination revealed damage to the

Summary of Aircraft Examination

G. SUMMARY OF AIRCRAFT EXAMINATION *(concluded)*

ignition harness wire corresponding to the no.1 upper spark plug. The harness damage was consistent with binding due to displacement of the engine.

The starter and alternator remained secured to the engine. Both appeared intact and undamaged. The alternator belt was intact and continuous. Neither the starter or alternator were tested or examined further.

The oil cooler remained securely attached to the engine. The oil lines were intact and secured to the cooler. Damage to the cooling fins on the aft side of the unit were consistent with contact with the engine mount during the accident. Minor cooling fin damage was present on the top aft edge of the unit.

Propeller Assembly – McCauley 1A200/FA8241, s/n XF46013²

The propeller remained attached to the propeller flange. The spinner remained attached. It was deformed upward and exhibited aft crushing damage. The spinner bulkhead remained secured to the hub and was deformed. All six propeller attachment bolts were securely installed; the safety wire was intact. One blade was bent aft about 60 degrees near midspan. The blade exhibited minor leading edges nicks near the blade tip, minor paint nicks on the blade face near midspan, and leading edge paint abrasion. The second blade was bent aft about 15 degrees near midspan. The blade exhibited minor leading edge nicks and paint abrasion. The blade also exhibited a gouge at the tip.

² Propeller model and serial number were obtained from information provided by the airplane owner/pilot. It was not verified during the post-recovery examination because removal of the propeller was not required.