



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety

Eastern Region

AIRFRAME AND ENGINE EXAMINATION

CASE NUMBER: ERA21FA355

AIRCRAFT: American Champion Aircraft 8KCAB, N390PE

EXAMINATION PARTICIPANTS:

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SUMMARY

Examination of the recovered airframe and engine was conducted at the Atlanta Air Salvage, Griffin, GA. No evidence of preimpact mechanical malfunction was noted during the examination of the airframe and engine.

DETAILS OF THE INVESTIGATION

The airplane came to rest on a heading 220° and all components of the airplane was at the wreckage site. All flight control surfaces were accounted for at the wreckage site.

Airframe Examination

The fuselage from the firewall to the empennage revealed accordion crush and impact damage. The instrument panel and cockpit were destroyed by impact damage. Both wings were separated from the fuselage and displayed crush and impact damage. The horizontal stabilizers and vertical stabilizer remained attached to the empennage but displayed impact damage. Flight control continuity was observed from the flight control surfaces to the flight controls within the cockpit. The flight instruments and flight controls within the cockpit were destroyed by impact damage. A cursory examination of the engine revealed impact damage. An examination of the propeller revealed that it was splintered and broken at the wreckage site. Propeller slash marks were noted on the trees and their branches.

Engine Examination

The engine remained partially attached to the firewall through the tubular mount. The engine was partially disassembled to facilitate the examination. The engine crankshaft was rotated by turning the propeller hub. Continuity of the crankshaft to the rear gears and to the valvetrain was confirmed. Compression and suction were observed from all four cylinders. The interiors of the cylinders were viewed using a lighted borescope and no anomalies noted.

The fuel injector servo remained attached to the engine. The induction air box was crushed. The throttle control cable remained attached to the servo throttle control arm. The arm was positioned near the servo idle stop screw. The throttle control linkage was impact damaged. The cockpit throttle control knob was not observed. The Mixture control cable remained attached to the servo mixture control arm. The arm was observed in a mid-range position. The cockpit mixture control knob was observed in a fully forward position. The fuel flow divider remained attached to the engine and the fuel injector lined were secure. The flow divider was partially disassembled and no damage to the rubber diaphragm or other internal components noted. The 2-piece fuel injector nozzles were unobstructed. The engine driven fuel pump remained attached to the engine end no damage was noted. The pump was actuated by, and pumping action observed. The pump actuator rod in the engine accessory case was observed to move up and down in its bore as the engine was rotated by hand. The pump was removed and partially disassembled. No damage to the rubber diaphragms, internal check valves or other internal components was observed. Liquid with an odor consistent with aviation gasoline was observed in the engine driven fuel pump, fuel injector servo, fuel flow divider and in the fuel lines forward of the firewall. Oil was observed in the engine. The oil suction screen and the oil filter media were absent of debris. Both magnetos remained attached to the engine and produced spark from all ignition towers when rotated by hand.

The propeller hub remained attached to the engine crankshaft flange. The propeller spinner was impact fragmented. One propeller blade was broken off about 1 foot outboard of the hub. The other blade was broken off at the hub. Neither of the broken off blade sections were observed.