

WRECKAGE/IMPACT INFORMATION

Fuselage

Observed during the on-scene investigation, the fuselage was impact damaged and fragmented. The forward cabin including the firewall, instrument panel, and lower fuselage including the floorboard was destroyed. Seat #1, #2, and #4 were separated from the airframe and found along the debris path. The seat back for seat #3 remained partially attached to the fuselage. The seat belt for seat #1 remained buckled and the inboard end of the belt remained attached to the airframe. The outboard end of the belt webbing was intact but was separated from the airframe by the fractured metal fitting.

The forward upper portion of the cabin was torn back and lay along the side of the tailcone. The right hand side of the forward fuselage, including the cabin door, was torn away and located along the debris field.

Flight control cable continuity for the stabilator and rudder was confirmed from the cockpit to the attach points at the empennage. The aileron cable chain segment in the cockpit was impact separated and the cables were separated about 10" from the chain consistent with impact forces.

The flap selector handle and ratchet mechanism were impact damaged and partially separated from the fuselage. The flap cable remained attached to the flap selector handle. Flap position could not be confirmed due to impact damage to the selector handle assembly.

The fuel selector valve was impact damaged and partially separated from the airframe. The selector handle was observed in an intermediate position between the Off and Left Tank positions. The selector handle was rotated through the Off, Left Tank, and Right Tank positions. The detents were noticeable and the valve functioned normally when low pressure air was applied to the left and right tank inlet ports. A few drops of fluid having an odor consistent with 100LL avgas were expelled from the valve when the low pressure air was applied. The fuel strainer bowl was impact separated from its mount and found loose in the tailcone. The fuel strainer screen was not observed in the wreckage. The primer in the cockpit was impact damaged but appeared to be in the stowed and locked position. The electric fuel pump switch in the cockpit was impact damaged and its position could not be determined. During the post recovery examination of the wreckage, the aircraft battery was electrically connected to the electric fuel pump and it was heard to operate.

The instrument panel was impact damaged resulting in several of the instruments being dislodged from their mounts and scattering along the debris path. The

electrical switches in the cockpit were impact damaged so that their pre-impact positions could not be determined.

Left Wing

Observed during the on-scene investigation, the left wing remained partially attached to the fuselage. The leading edge exhibited leading edge crushing beginning near Wing Station (W.S.) 50 and extending outboards to the tip. The fuel tank was impact damaged and breeched. No fuel was observed in the tank. The fuel filler cap remained installed in the filler neck opening. The fuel tank finger screen appeared free from blockage. The flap remained attached by its hinges. The upper and lower wing skins were torn chordwise near the flap and aileron split. The outer portion of the wing, forward of the aileron, exhibited accordion type crushing throughout. The aileron was impact damaged and remained attached to its hinges. The aileron bellcrank was impact damaged. The aileron and balance cables remained attached to the bellcrank arms and were continuous to the fuselage. The aileron bellcrank stops remained attached and were unremarkable. The pitot mast remained attached to its mount. The lift detector was separated from its mount and only remained attached to the wing by the electrical wires. The landing gear remained attached with no impact damage observed.

Right Wing

Observed during the on-scene investigation, the right wing was separated from the fuselage with fragments located along the debris path. Fragments of green lens material were observed in the small crater identified as the initial point of impact. The inboard leading edge of the right wing was separated from the wing and observed in the debris field. A portion of the right wing including the main spar, main landing gear, flap, and fuel tank was observed along the debris path. The fuel tank was impact damaged and breeched. No fuel was observed in the fuel tank. The fuel filler cap remained installed in the filler neck opening. The fuel tank finger screen appeared clear and free from blockage. The flap was impact damaged and remained attached by its hinges. The wing portion outboard of the fuel tank was separated chordwise from the inboard portion of the wing and was located in the debris field. The aileron was impact damaged, separated from the wing, and located in the debris field. The aileron bellcrank was separated from its mount but remained captured in the wing. The aileron and balance cables remained attached to the bellcrank arms and were continuous to the wing root.

Empennage

Observed during the on-scene investigation, the empennage was upside down. The vertical stabilizer was displaced down and forward into the top of the tailcone. The rudder remained attached by its hinges and the cables remained attached to the rudder horn. The rudder stops were intact and unremarkable. The stabilator remained attached by its hinges and the balance tube, including the counter weight, remained attached to the forward stabilator spar. The left side of the stabilator exhibited impact damage to the leading edge and aft crushing extending further aft towards the tip. The stabilator stops were unremarkable. The stabilator trim tab

remained attached by its hinge. The stabilator trim jackscrew was extended about 1.25" (~10 threads exposed) about the drum which corresponds to a partial aircraft nose up trim setting.

Engine

Observed during the on-scene investigation, the engine was captured in the main portion of the wreckage and remained partially attached to the truss mount. The engine was upside down and exhibited impact damage throughout. The carburetor was impact damaged and separated from its mount. The throttle and mixture control arms were impact damaged and the cables were not attached. The exhaust muffler was crushed and was punctured consistent with impact forces. The engine was separated from the main wreckage and hosed down by the fire department to remove the earth and grass embedded on the engine. The engine was moved to a hangar arranged by the aircraft owner to facilitate further examination. The exhaust muffler was observed crushed and punctured.

During the post-recovery examination of the engine, the top spark plugs were removed and appeared normal. The vacuum pump was found intact and secure on its mount. The vacuum pump was removed to facilitate rotation of the crankshaft by an adapter inserted into the vacuum pump drive pad. The crankshaft was able to rotate manually and compression and suction were observed at each of the top spark plug openings.

The magnetos remained attached to their respective mounts but the spark plug harnesses were impact damaged. The magnetos were removed from their mounts and the spark plug leads cut near the caps to facilitate examination. The left magneto, which included an impulse coupling, produced spark at each lead when rotated by hand. The right magneto was rotated using a cordless drill and produced spark at each lead.

The engine driven fuel pump remained attached to its mount. One of the ports on the pump was fractured and the fitting and hose were separated. The engine driven fuel pump was removed from the engine to facilitate examination. The drive arm was actuated manually and the pump was heard to operate. The pump was disassembled and the diaphragm appeared to be in good condition. Some mud was observed in the pump near the fractured port. The oil sump screen appeared clear and free from blockage.

Propeller

Observed during the on-scene investigation, the propeller was separated from the crankshaft propeller flange and located along in the debris field. Blade (A) exhibited forward bending about mid span. Blade (B) exhibited leading edge polishing and aft bending. The six propeller retention bolts were sheared at the propeller flange and several bolts exhibited torsional bending.