

ERA18FA180

Airframe and Engine examination

The main wreckage was located approximately 400 feet from the centerline of runway 35 on a 242° heading. The airplane impacted treetops at approximately 75 feet AGL and 400 feet from the departure end of the runway 17 centerline. The wreckage path was 124 feet long on a 242° magnetic heading. The airplane came to rest inverted, facing the direction of travel in between trees adjacent to the airport perimeter. The airplane sustained extensive compression damage to the forward fuselage, reducing the cockpit volume. The right wing had trailing edge tree damage at the flap and aileron as well as leading edge crush damage throughout the length of the wing. The left wing was still attached to the airplane with the part of the outboard section separated. The right elevator separated from the horizontal stabilizer. The left horizontal stabilizer was observed with the banner tow rope wrapped around the leading edge. All flight control surfaces were observed at the accident site. Flight control cable continuity was established from the cockpit to all flight control surfaces.

Examination of the cockpit revealed the instrument panel was impact damaged, which prevented an examination of the instruments. Examination of the engine revealed that it was impact damaged. The engine remained attached to the airframe at the tubular mount. The engine was displaced aft and toward the left. The propeller remained attached to the engine flange. The propeller spinner was fragmented. The engine was partially disassembled to facilitate an examination. The engine was rotated by turning the crankshaft flange and continuity of the crankshaft to the rear gears and to the valve train was confirmed. Compression and suction were observed on all four engine cylinders. The interiors of the cylinders were viewed using a lighted borescope and no anomalies were noted.

The carburetor was fractured across the throttle bore and impact-separated from the engine. The throttle cable was broken and remained attached to the carburetor throttle control arm. The mixture control cable wire was separated from the carburetor mixture control arm. The carburetor induction air box was partially crushed, and the carburetor heat control cable separated from the air box control arm. The positions of the control arms before impact could not be determined. In the cockpit, the throttle control knob was aft, the mixture control knob was aft, and the carburetor heat control knob was forward.

The carburetor was partially disassembled, and no damage was noted to the internal components. Blue colored liquid with an odor consistent with aviation fuel was observed in the carburetor float bowl. The carburetor fuel inlet screen was free of debris. The engine driven fuel pump remained attached to the engine and no damage was noted. The hose from the pump to the carburetor was separated at the carburetor fuel inlet fitting and aviation fuel was expelled from the hose as the engine was rotated. The pump was not removed. The auxiliary electric fuel boost pump remained attached to the firewall and no damage was noted.

Both magnetos remained attached to the engine and no damage was noted. The engine was rotated by turning the crankshaft flange and spark was observed from all four ignition leads of both magnetos. The magnetos were not removed. The spark plugs were examined using a Champion Check-A-Plug chart. The

lower spark plugs exhibited gray color and worn normal condition. The upper spark plugs were not removed but their electrodes were viewed using a lighted borescope and exhibited gray coloration and worn normal condition.

Oil was observed in the engine. The oil suction screen and the oil filter media were free of metallic debris. Both oil coolers and the associated hoses were secure.

Examination of the propeller revealed both blades were damaged and remained attached to the crankshaft flange. Both blades were bent aft and had chordwise scoring throughout the blade span.