

## Engine Examination

ERA19FA068

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 blades were fragmented and broken. 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 fuel servo was fractured and crushed. The throttle cable was broken and remained attached to the fuel servo throttle control arm. The fuel injection lines were crushed. The lines were still connected to the fuel injectors and the fuel manifold. The engine driven fuel pump remained attached to the engine 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 upper sparkplugs were examined using a Champion Check-A-Plug chart. The sparkplugs exhibited gray color and worn normal condition. The lower sparkplugs 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. The oil coolers and the associated hoses were secure.

Examination of the composite propeller blades revealed all three blades were damaged and remained attached to the crankshaft flange. All three blades were broken and fragmented had chordwise scoring throughout the blade span.

No anomalies were noted with the engine that would have precluded normal operation.