

Kurt Gibson
Aviation Accident Investigator
AS-ERA

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Subject: ERA23LA337: Wreckage Examination

Contact: Hugo Villanueva – FAA and Kris Wetherell – Piper Aircraft

On 10/24/2023, the airplane wreckage was examined by the FAA and Piper Party Coordinators. The following is a summary of the examination:

Fuselage

The fuselage displayed buckling on the left and right side near the firewall from the windscreen to the cabin floor, forward of the wing. Both cabin doors and the baggage door remained intact and attached at the hinges. The aft fuselage displayed some minor buckling.

Control continuity

All flight control surfaces remained attached to their original mounting locations, with the exception of the stabilator tips, which were cut by recovery personnel. Flight control continuity was established for the ailerons, rudder, stabilator and stabilator trim. All flight control cables were continuous and intact except for the ailerons, which had been cut during the recovery at the wing root on both sides.

Instrument panel / Flight Controls

The master switch, fuel pump switch, strobe light and pitot heat were off. The landing light and beacon light were on. The keyed magneto/starter switch appeared to be off with no key present. The hour recording meter read 0559.1 hours.

The throttle position was about one third below full. The propeller control was near full forward. The mixture was near cut off. The alternate air control was closed.

The flap selector was observed to be in the fully retracted position. The flap position was verified at the flap torque tube and at the right-wing root flap control rod. The stabilator trim indicator was approximately neutral.

Wings

The left wing had been cut and separated from the airframe, at the wing root, by recovery personnel. The left wing displayed compression damage along the entire leading edge. The left flap and aileron remained attached to the wing at all hinges. The left aileron bellcrank remained attached and in place inside the wing. Both aileron cables remained attached to the bellcrank. Blue staining was observed on the bottom side of the wing, from the main tank fuel drain to the leading edge of the wing. The left fuel tip tank and wing tip remained attached to the wing. The left-wing tip displayed blue staining from the tip tank fuel drain to the leading edge. The left main landing gear strut, wheel and tire were separated from the mounting structure.

The right-wing main spar, and the leading and trailing edge attachments were broken and deformed during the accident. The right wing remained attached only by the aileron cables, which were then cut for recovery. The leading edge of the right wing displayed compression damage along the entire span. The aileron and flap remained attached to the right wing at all hinges. The right flap was bent down at approximately the inboard third of the span. The right aileron bellcrank was torn from the mounting location and had been pulled to a position near the wing root. Both aileron cables remained attached to the right aileron bellcrank. The aileron control rod from the bellcrank to the aileron was broken. The aileron balance weight remained attached at the outboard end of the aileron. The inboard end of the aileron revealed approximately 6 inches of compression damage. The right tip fuel tank and wing tip were separated from the wing. The right main fuel tank cap was observed in place on the filler port. The gasket was intact and pliable. The fixed main landing gear strut, wheel and tire remained in place.

Empennage

The vertical stabilizer and rudder remained attached to the fuselage. The right side of the vertical stabilizer revealed buckling at about mid-span. The rudder remained attached to the vertical stabilizer at all hinges and revealed no notable damage.

The stabilator remained attached at the hinges. The stabilator revealed leading edge compression on the left side at the inboard end. A small portion of a tree branch was observed lodged in the deformed stabilator at this location. The right side of the stabilator was buckled

from the tip to the inboard end. The stabilator trim control surface was bent downward on the left side at approximately mid-span between the inboard end and the tip. The trim surface remained attached at all hinges.

Airframe Fuel System

The fuel selector valve selector handle was observed in the off position during the off-site examination. The fuel selector valve was observed in the off position and revealed some damage to one fuel line at the connection to the valve. This damage was consistent with impact damage. Fuel was drained from the fuel selector valve/fuel strainer using the normal sump draining handle. This fuel had the odor and color consistency of 100LL and was clear of debris. A water contamination test was conducted on the sample using Kolor Kut water detecting paste. The paste showed no change in color when submerged in the fuel sample indicating no presence of water in the sample.

The fuel selector valve was tested and found to flow appropriately in all positions. Flowing low pressure air from each of the four wing tank fuel lines, (at the wing roots) with the fuel selector valve set to the corresponding tank.

The electrically driven boost pump was successfully operationally tested by adding fuel to the left main tank fuel line at the wing root and operating the pump.

Engine

The engine, a Lycoming model IO-540-K1A5, serial number L-4133-48 remained attached to the firewall at the engine mounts. The engine displayed an oily and greasy appearance near the oil filler tube and in other locations on the left rear quadrant of the engine. The three-blade controllable propeller remained attached to the propeller flange. The engine displayed impact deformation to the intake and exhaust tubing. The engine case halves displayed a sealing material that had been applied along the entire top of the case.

The crankshaft rotated freely by hand. All cylinders were previously borescoped by the FAA and found to exhibit normal internal features. The right and left magnetos and associated wiring harnesses remained attached and in place. The propeller governor remained attached and intact. The governor control arm was in the full increase/fine pitch position.

The fuel servo, throttle arm was found in a mid-range position. The mixture arm was found in a mid-range position. The fuel servo was removed from the mounting location and the fuel servo screen was examined. The screen was clear of debris.

Induction Air

The air filter was intact and in place. The element presented some particles on the surface. The interior screen was clean. Examination of the induction air tubing leading from the air filter to the fuel servo revealed that the aluminum elbow attached to the fuel servo was contacting the firewall and displayed a triangular shaped hole where the two surfaces had been in contact. The firewall revealed a matching contact point that presented a fretting type of metal wear appearance. Upon removal of the elbow from the fuel servo deformation of the interior portion of the elbow was observed. The air inlet of the fuel servo displayed a large amount of grease and oil.

Propeller

The aluminum, controllable, three-blade McCauley propeller remained attached to the propeller flange. It was a model B3D36C433B, serial number 97156. One blade exhibited aft bending. One blade was loose in the propeller hub. Two of the three blades displayed minor deformation.

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