



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

AIRFRAME AND ENGINE EXAMINATION

WPR15FA250

This report contains four photographs

A. ACCIDENT

Location: Llano, California
Date: August 27, 2015
Aircraft: Piper PA-25-260, N4369Y
NTSB IIC: Elliott Simpson

B. EXAMINATION PARTICIPANTS:

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C. SUMMARY

Examination of the recovered airframe and engine was conducted on October 6, 2015 at the facilities of Southern California Soaring Academy in Llano, California. No evidence of preimpact mechanical malfunction was noted during the examination.

D. DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

The cabin sustained crush damage from the firewall through to the forward legs of the pilot's seat. The remaining aft fuselage structure along with the empennage section sustained minimal damage. Both wings remained attached to the fuselage by their respective main spars and lift struts. The left wing leading edge had twisted upwards, and the wing sustained aft crush damage through to the aileron along its entire length. The right wing exhibited leading edge crush damage outboard of the lift strut attach points.

The elevator flight control cables were continuous from the elevator horn through to the base of the control stick in the cabin. The rudder control cables were continuous from the foot pedals to the rudder horn; the right rudder horn had bent upwards.

The aileron flight control cables were continuous from the left aileron through to the cabin control stick. The right wing cable was similarly attached to both the control stick and aileron, but had separated at the wing root where it exhibited “broomstraw” failure signatures of its strands. Both ailerons remained attached to the trailing edges of each wing.

Both flaps remained attached at their hinges to the trailing edges of each wing, and were still connected to their bellcranks via the push-pull tubes. The flap control cables were continuous from the bellcranks through to the flap control in the cabin. Impact damage prevented an accurate assessment of the flap positions at impact.

A stall warning light was present in the cockpit, but no stall warning device was present on the wing. The tow cable was completely wound in, and around the hitch mechanism, with no cable trailing from the airplane.

The seat remained attached to its rails on the cabin floor. The lower left and right seat belt attachment cables had separated at the belt swage fitting. The upper belt strap had failed at the webbing.

2.0 Engine Examination

The engine remained partially attached to its mount, and had shifted downwards and to the right of the fuselage centerline. One propeller blade exhibited a 5-degrees aft bend midspan, the other blade sustained chordwise scratches along its entire surface and nicks to its leading edge. The bladder-style fuel tank was exposed, had been breached, and came to rest covering the engine. Although no fuel was found in the tank, the soil under the engine was soaked with a liquid that had the odor of aviation gasoline.

The gascolator screen was free of blockage, and all fuel lines through to the carburetor were intact and free of obstruction.

The engine sustained damage during the accident sequence, separating the carburetor, crushing the oil filter, and impinging the ignition harness against the firewall. The inlet air filter and associated induction tubes were free of obstruction. The oil sump was empty and exhibited a puncture hole. Oil was present in the soil around the accident site. The oil filter was removed and cut open to expose the filter media. The media was coated in dark-colored oil, and free of debris.

The carburetor was disassembled and examined. All internal and external locking tabs and safety wires were in place and properly secured. The fuel bowl was free of visible contaminants, and the float assembly remained secure at its pivot assembly, and free of damage. The floats exhibited no evidence of rubbing against the wall of the bowl. The fuel inlet screen was free of contamination.

The top spark plugs were removed and examined. Their electrodes remained mechanically undamaged, coated in light grey deposits, and displayed normal wear signatures when compared with the Champion Spark Plugs AV-27 Check-A-Plug chart. The exhaust pipes exhibited light grey deposits, and were free of oil residue. The crankshaft turned freely when rotated via the splined drive at the governor drive pad, and “thumb” compression was noted on all cylinders. Mechanical continuity was established throughout the rotating group, valve train, and accessory section.

Both magnetos remained firmly attached to their pads. Damage to the flywheel prevented an accurate assessment of the magneto-to-engine timing. The magnetos were removed, and could be rotated by hand; sparks were observed at the termination of the magneto output towers. Visual inspection of the combustion chambers was accomplished through the spark plug bores utilizing a borescope; there was no evidence of catastrophic internal damage and all combustion surfaces exhibited light grey deposits consistent with normal operation.

2.1 Airframe and Engine Examination Photos



Photo 1 – Airplane at Accident Site



Photo 2 – Airplane at Accident Site



Photo 3 – Engine at Accident Site



Photo 4 – Propeller

Submitted by: Elliott Simpson