



CEN19LA129

Sulphur Springs, Texas

April 27, 2019

Piper P-23 Apache

N233P

NTSB WRECKAGE EXAMINATION NOTES

July 1-2, 2019

PARTICIPANTS IN THE EXAMINATION

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HISTORY OF FLIGHT

On April 27, 2019, about 0945 central daylight time, a Piper PA-23 airplane, N233P, experienced a dual engine failure and conducted a forced landing onto a field near Sulphur Springs Municipal Airport (SLR) in Sulphur Springs, Texas. The pilot was not injured, and the airplane sustained substantial damage to the left wing, nose, right wing, nose landing gear and left main gear. The airplane was privately owned and operated by the pilot as a 14 Code of Federal Regulations Part 91 personal flight. Day visual meteorological conditions prevailed, and no flight plan was filed for the flight that originated at Mount Pleasant Regional Airport (OSA), Mount Pleasant, Texas.

The pilot reported he departed OSA approximately 0845 and climbed out to a cruise altitude of 3,500 ft msl. As he passed over SLR, about 8 miles to the northwest, he noticed a slight RPM drop on the left engine from 2,500 to about 2,400. He increased the left engine manifold pressure to “full,” but RPMs continued to drop. The pilot saw a small amount of black smoke coming from left engine and checked primer was still locked. Airspeed was decreasing so he made the decision to turned back to SLR. He turned on the boost pumps; then checked the fuel quantity, gauges, verified fuel tanks were set on main, all were good. The RPMs on left engine were down to 2,000 rpm, with full power. The airplane was losing altitude between 100-200 fpm and was about 3,000ft msl with airspeed and ground speed continuing to drop. “With no warning, the right engine died.” He attempted to restart but the right engine would not restart. The pilot feathered the right propeller and determined he was not able to make it to SLR. He located a field to complete a forced landing. As he descended to the field, “within about 30 seconds of the right engine stopping, the left engine lost power.” The left engine continued to windmill but was not responsive to throttle changes. He completed his forced landing, then cut off fuel pumps, fuel, avionics, and the master switch.

EXAM INFORMATION

On July 1 and 2, 2019, NTSB, Piper Aviation, and FAA met at Air Salvage of Dallas in Lancaster, Texas for examination of the wreckage. The following depicts the activities of the examination.

Airframe

Fuselage

Observed during the post-recovery examination, the fuselage was upright and exhibited impact damage to the nose and lower forward fuselage. Both wings, the vertical stabilizer and rudder, and the horizontal stabilizer and elevator were separated from the fuselage. The forward cabin door remained attached to its hinges. The aft baggage door remained attached to its hinges. Seat #1 and seat #2 were separated from their seat rails but were inside the cabin. Seat #3 and seat #4 remained partially attached to their seat rails. All of the seat belts remained attached to their respective attach points on the seat frames. There were no shoulder harnesses installed. The

windshield forward of seat #1 was fractured and separated from the fuselage. The forward side window on the left hand side was fractured and separated from the fuselage. The nose landing gear strut was extended and the nose wheel assembly was fracture separated.

The aileron flight control cables were continuous from the control columns to recovery cuts near the main wing spar. The rudder cables were continuous from the rudder pedals to the cable ends in the tailcone. The rudder trim cables were disconnected at the empennage by recovery personnel. The elevator control pushrods were continuous from the tee-bar in the cockpit to the elevator connection in the tailcone. The pitch trim cables were continuous from the cockpit to the trim screw in the tailcone.

The fuel control panel was separated from the main wing spar by recovery personnel. The left fuel selector handle was in the "ON MAIN" position. The right fuel selector handle was in the "AUX ON" position. The cross feed lever was in the "ON" position. Both primer knobs were stowed and locked.

The left throttle lever was in a mostly forward position. The right throttle lever was in the full forward position. Both propeller control levers were fully forward. Both mixture control levers were in the full forward position. All four magneto switches were in the aft (off) position. Both boost pump switches were in the aft (off) position. The flap control lever was in the "DOWN" position. The landing gear selector handle was in the "DOWN" position. The carburetor heat knobs were both in the fully forward (off) position.

The aircraft battery remained installed in the aircraft and when the battery MASTER switch was moved to the "ON" position, the electronic tachometers were observed to turn on and the "Hours" button was depressed on each tachometer. The left tachometer displayed 563.79 hours and the right tachometer displayed 588.97.

The ELT remained installed in its mount in the tailcone. The antenna cable was disconnected and the remote switch cable remained connected. The ELT switch was in the "OFF" position. The remote ELT switch in the cockpit was in the center position.

Left Wing

Observed during the post-recovery examination, the left wing main wing spar had been disassembled at the fuselage by recovery personnel. The engine truss mount exhibited cuts from recovery personnel and the engine was separated from the wing. The main landing gear was extended and the strut was bent inboard. The pitot mast was intact. The aileron remained attached to its hinges. The aileron cables exhibited recovery cuts near the wing root and were continuous to the bellcrank. The flap remained attached to its hinges. The outboard end of the leading edge exhibited impact damage and aft crushing consistent with impacting terrain. The auxiliary fuel cell was crushed and torn. The auxiliary fuel filler cap remained installed in the fuel filler opening. According to recovery personnel, 7-8 gallons of fuel was drained from the

auxiliary fuel cell at the accident site after they disconnected the fuel line fitting near the fuel cell outlet. The recovery personnel stated they disconnected the fuel line from the auxiliary fuel shutoff valve at the accident site while attempting to drain fuel from the auxiliary fuel cell.

The fuel filler cap remained installed in the fuel filler opening of the main fuel cell. The main fuel cell appeared intact and fluid was observed in the fuel cell when viewed from the filler opening. The fuel strainer sump drain was pushed upwards and approximately 2 cups of liquid were captured in a container. The liquid was not homogenous with the upper part of the liquid appearing blue, consistent with 100 LL avgas, and the lower portion of the liquid was clear with brown sediment visible at the intersection of the two liquids. The fuel strainer bowl was removed and examined revealing rust colored liquid and sediment in the bowl. The fuel strainer screen contained numerous small flakes of undetermined material.

The auxiliary fuel shutoff valve and the main fuel shutoff valve were tested with low air pressure and appeared to function normally in both the on and off positions. The electric boost pump was connected to an electrical power source and was heard to operate.

A combined total of approximately 45 gallons of liquid were drained from the left and right wing's main fuel cells. Most of the liquid was blue in color consistent with 100 LL avgas. Approximately 2 gallons were drained from the left main fuel cell which appeared clear and indicated positive for water when tested with Kolor-Kut water finding paste.

Right Wing

Observed during the post-recovery examination, the right wing main wing spar had been disassembled at the fuselage by recovery personnel. The engine truss mount exhibited cuts from recovery personnel and the engine was separated from the wing. The main landing gear was partially extended. The aileron remained attached to its hinges. The aileron cables exhibited recovery cuts near the wing root and were continuous to the bellcrank terminations. The bellcrank and pushrod were impact damaged and fractured. The flap remained attached to its outboard hinge. The flap was torn and bent approximately mid span. The inboard flap hinge was separated from the wing. The outboard end of the leading edge exhibited impact damage with upwards and aft crushing consistent with impacting terrain. The auxiliary fuel cell was crushed. The auxiliary fuel filler cap remained installed in the fuel filler opening. According to recovery personnel, and no fuel was observed in the auxiliary fuel cell at the accident site.

The fuel filler cap remained installed in the fuel filler opening of the main fuel cell. The main fuel cell appeared intact and fluid was observed in the fuel cell when viewed from the filler opening. The fuel strainer sump drain was pushed upwards and approximately 2 cups of liquid were captured in a container. The liquid appeared blue, consistent with 100 LL avgas. The fuel strainer bowl and screen were removed and examined. No debris was observed in either the bowl or the screen.

The auxiliary fuel shutoff valve and the main fuel shutoff valve were tested with low air pressure and appeared to function normally in both the on and off positions. The electric boost pump was connected to an electrical power source and was heard to operate.

Empennage

Observed during the post-recovery examination, the vertical stabilizer and rudder had been removed from the tailcone by recovery personnel and appeared undamaged. The rudder trim screw was extended forward approximately 1.75" which corresponds to a full tab left deflection. All four mounting screws were missing from the rudder trim drum and the cables had been disconnected in the tailcone.

The horizontal stabilizer and elevator had also been removed by recovery personnel and appeared undamaged. The stabilizer trim screw revealed approximately 14 exposed threads which corresponds to a partial nose up trim setting.

Left Engine

The left engine carburetor was removed from the engine to be opened for examination. The bolts that secured the upper and lower halves of the carburetor were found very loose, no more than finger tight. When the carburetor was opened, the inside of the bowl was dry and the gasket on the 3 of the 4 sides of the carburetor was worn consistent with rubbing between the two carburetor halves. Also, the drain ports on the lower bowl section of the carburetor exhibited areas of rust. The non-OEM air induction system was observed and appeared free of any blockages. The air filter also appeared clean, free from any debris.

The left engine was a Lycoming model O-320-B3B, serial number L-4010-39. The upper spark plugs were removed. The plugs displayed heavy carbon coating consistent with the engine running at a rich fuel setting. The spinner, propeller hub and propeller blades were removed from the engine to facilitate rotation of the engine.

Engine to magneto timing of the left engine was checked using a magneto timing test box. The specified timing on the data plate was 25°, and the timing of the left engine had been set about 23°. A thumb compression check was completed with compression verified in all 4 cylinders. The accessories turned uninhibited and the propeller flange turned freely. The lower spark plugs were removed. The left magneto (Slick Magneto, serial number 05100006, model 4373) impulse coupling could be heard 'clicking' when the propeller flange was rotated. The left magneto harness coils were held near bolts on the engine case to observe for spark, all four coils produced a spark. The right magneto (Slick Magneto, serial number 97090377, model number 4370) was removed from the engine and rotated using an electric driven power socket wrench, all 4 harness coils produced a spark when held near bolts on the engine case.

The engine driven fuel pump was removed from the left engine and bench tested for operation using solvent. When the pump lever was actuated, solvent flowed through the incoming and outgoing fuel lines. The fuel pump was split open, no rust or discoloration was present.

The oil filter was removed from the engine and the case split to observe the filter paper. The oil inside the filter and the filter paper was clean and free of any debris.

Right Engine

The right engine carburetor was removed from the engine to be opened for examination. The carburetor was opened; it was dry and appeared normal. The non-OEM air induction system was observed and appeared free of any blockages. The air filter also appeared clean, free from any debris.

The right engine was a Lycoming model O-320-B3B, serial number L-2703-39. The upper spark plugs were removed, and the plugs displayed normal wear. A thumb compression check was completed with compression verified in all 4 cylinders. The accessories turned uninhibited and the propeller flange turned freely. The lower spark plugs were removed.

Engine to magneto timing of the right engine was checked using a magneto timing test box. The specified timing on the data plate was 25°, and the timing of the left engine had been set about 12.5°. The left magneto (Slick Magneto, serial number 88100188, model 4273) impulse coupling could be heard 'clicking' when the propeller flange was rotated. The left magneto harness coils were held near bolts on the engine case to observe for spark, all four coils produced a spark. The right magneto (Slick Magneto, serial number 05090609, model number 4370) was removed from the engine and rotated using an electric driven power socket wrench, all 4 harness coils produced a spark when held near bolts on the engine case.

The engine driven fuel pump was removed from the left engine and bench tested for operation using solvent. When the pump lever was actuated, solvent flowed through the incoming and outgoing fuel lines. The fuel pump was split open, no rust or discoloration was present.

The oil filter was removed from the engine and the case split to observe the filter paper. The oil inside the filter and the filter paper was clean and free of any debris.

Propellers

The left propeller (Hartzell, part number HC-C2YL-2CUF, serial number AY170B) was found in the un-feathered position. Both blades showed signs of polishing and chordwise scratching. There was slight S-bending of both blades.

The right propeller (Hartzell, part number XXX, serial number XXX) was found in the feathered position. One of the two blades exhibited signs of polishing and chordwise scratching. The other

blade had no polishing or scratching. Both blades appeared straight with no bending, consistent with no power at impact.