



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety

Wreckage Examination Report

February 22, 2022

A. ACCIDENT **WPR21FA352**

Location: Page, Arizona
Date: September 22, 2021
Time: 1624 MST
Operator: Private
Aircraft: Piper PA-28R-200
Registration: N3906X

B. SUMMARY

On September 22, 2021, about 1624 mountain standard time, a Piper PA-28R-200, N3906X, was substantially damaged when it was involved in an accident near Page, Arizona. The pilot was fatally injured and the passenger sustained serious injuries. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

Automatic dependent surveillance broadcast (ADS-B) data obtained from the Federal Aviation Administration captured the airplane's climb out at 1211 Pacific daylight time about 1 nm north of its departure airport in San Martin, California. The mean sea level (msl) altitudes below are reported as geometric altitudes and were obtained from the ADS-B data. The airplane slowly turned to the southeast as it continued to climb. At 1302, the airplane reached a cruise altitude of about 12,000 ft msl and subsequently turned to the south about 15 minutes later, at which time it arced around the southern base of the Sequoia National Forest. At 1528, the airplane descended to about 7,700 ft msl while passing to the north of Las Vegas, Nevada. The airplane then descended further about 1615 and 30 nm west of Page Municipal Airport (PGA), Page, Arizona near the Vermilion Cliffs National Monument to about 7,250 ft msl (1,100 ft above ground level (agl)). At 1623, the airplane descended to about 6,600 ft msl where it remained until about 1623:46 when it began its final descent from 500 ft agl. The final ADS-B data point was captured at 1624:15, when the airplane was 200 ft agl and about 0.5 nm northwest of the accident site.

The airplane was located about 11 nm west of PGA on a mesa at a field elevation of about 6,150 ft msl. The airplane came to rest at a level attitude on a heading of 227° magnetic. The first point of impact (FPI) was identified by a 12-foot-tall Juniper tree and several broken tree branches. A debris path was marked by parallel ground scars that began about 20 ft forward of the FPI and was oriented on a heading of 155° magnetic. The outboard right stabilator was located on the left side of the debris path.

The main wreckage marked the end of the debris path and was located 62 ft beyond the FPI. The nose and main landing gear had collapsed and the fuselage was flush with the ground. Both wings remained attached to the fuselage; the left wing displayed a large compression wrinkle about midspan at the leading edge and the top skin. The inboard section of the right wing exhibited compression wrinkles about midspan. Both wings were punctured inboard above the right and left main landing gear. The ailerons and flaps were connected to their respective wings and were mostly undamaged, with exception of the right and left flaps, both of which exhibited upward bends at the inboard trailing edges. The left side of the stabilator had advanced forward several inches in a divergent path to the right stabilator, which had moved aft. Additionally, the right stabilator leading edge was crushed aft along the outboard leading edge about midspan. The vertical stabilizer and rudder were not damaged. The cowling and engine were displaced slightly downward, and the engine had separated from some of the upper mounts. Three propeller blades remained attached to the engine at the propeller hub. One blade was bent aft about midspan, one blade was bent at the blade root beneath the engine and the last blade was straight. Two of the propeller blades did not contain any visible chordwise scratches, nicks, or gouges. The third propeller blade was observed beneath the engine and could not be inspected. All major structures were accounted for at the accident site.

C. DETAILS OF THE INVESTIGATION

The airplane was recovered to Air Transport in Phoenix, Arizona where an examination was completed on February 22, 2022.



Photograph 1: Accident airplane and engine prior to examination

D.1 Airframe Examination

D.1.1 Flight Controls

Continuity of the aileron, stabilator and rudder were confirmed from the cockpit to their respective control surfaces. Stabilator trim was also traced from the cockpit to the stabilator. The pitch trim showed 0.75 inches of extension from the trim barrel (4 exposed threads), which correlates to partial nose down trim. Flap control was traced from the flap handle to the wing flaps.

D.1.2 Fuel System

The wings were removed at the wing roots by recovery personnel. Water was deposited into the right and left wing fuel tanks and was expelled from the fuel inlet port at the wing root. The left and right wings did not show any evidence of a breach in the fuel lines or fuel tanks.

The fuel pump was connected to a 12v battery to facilitate a functional test of the unit. The pump motor rotated continuously during the test. A subsequent disassembly of the unit revealed that the magnets were intact and affixed to the internal diameter of the pump housing and there were no indications of an internal separation.

The gascolator bowl did not contain any liquid, but the bowl was lined with a brown/silver film. The fuel screen was unremarkable.



Photograph 2: Gascolator bowl

D.1.3 Fuselage

The fuselage was buckled at the footwell and vertical crush damage was observed below seat no. 1.

D.1.4 Seats and Restraints

Seat no. 1 (pilot seat)

The forward frame tubes were folded and displaced downward. The left aft frame tube was folded as was the right, which subsequently fractured when little force was applied upward to the seat. The rest of the seat structural hardware was otherwise secure and unremarkable. The seat tracks remained attached to the floor and the roller was attached to the tracks.



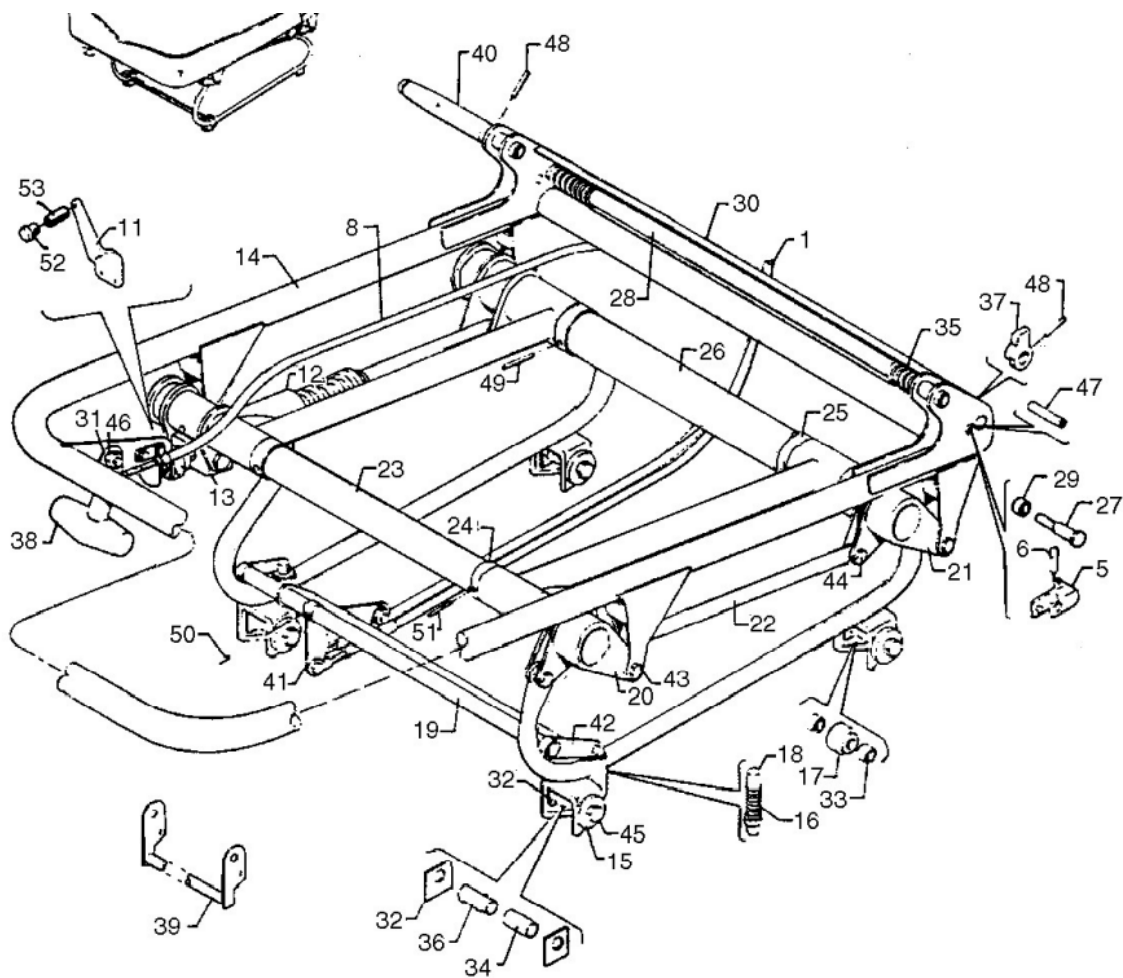
Photograph 3: Seat no. 1 forward tubes and seat tracks

Seat no. 2

The forward frame tubes were partially collapsed. The left aft frame tube was partially folded and the right tube was crushed. Similar to seat no. 1, the seat track was attached to the floor and the roller remained attached to the seat track.



Photograph 4: Seat no. 2 aft frame tubes and seat tracks



Photograph 5: Front seat assembly from illustrated parts catalogue

Left and Right Seat Restraints

The floor mounted seat attachment points were undamaged. Both ceiling mounted inertial reels were jammed in place. The rollers and were intact and part of the rolled shoulder belts remained at their rollers. The left seat shoulder harness was cut by recovery personnel.



Photograph 6: Seat no. 1 inertial reel

D.2 Engine

The engine was a Lycoming Engines IO-360-C1C, s/n L-14426-51A, an air-cooled, 200 hp reciprocating engine. The engine baffling was damaged and the no. 1 exhaust tube was partially bent. Additionally, an engine mount tube had collapsed onto the no. 4 induction pipe and the O ring was partially extruded at the collar. The engine was otherwise unremarkable. The accessories remained attached to the engine case and the induction and exhaust tubes were intact and undamaged.



Photograph 7: Engine prior to examination

Mechanical continuity was established throughout the rotating group, valve train and accessory section as the crankshaft was manually by hand rotated at the propeller. Thumb compression was achieved at all four cylinders and the valves displayed normal lift when the crankshaft was rotated. Examination of the cylinders combustion chamber interior components using a lighted borescope revealed normal piston face and valve signatures, and no indications of catastrophic engine failure.

The left magneto was a Teledyne Continental Motors model no. S4LN-1227. The right magneto was a Teledyne Continental Motors model no. S4LN-1209, s/n F16KA253R. The magneto to engine timing was 20° BTDC. Each of the ignition harness coils were secured tightly to their respective spark plugs. The left magneto impulse coupling was heard as the propeller was rotated by hand. Both magnetos were subsequently removed and the ignition leads were cut; spark was observed at the cut ends of all 8 ignition harness leads as each magneto was rotated by hand. The top and bottom spark plugs were manufactured by Champion, model REM 38E massive electrode plugs. Each of the 8 spark plugs were gray in appearance, consistent with normal wear.



Photograph 8: Top spark plugs

The fuel lines were in place and secured to their respective fittings at each fuel system component. The fuel injection servo was attached to the mounting pad of the plenum and the throttle mixture controls were attached to their respective controls arms at the servo.

The foam filter was intact and did not contain any obstructions.

All four fuel injection nozzles remained attached at each cylinder with their respective fuel lines attached. The nozzles were free of visible contamination.

The flow divider remained attached to the top of the engine case; the divider filter was free of debris and the diaphragm was pliable. No fuel was observed in the hose from the engine driven fuel pump outlet to the inlet of the fuel servo. All 4 of the fuel injectors were clear. The fuel pump was free of internal mechanical malfunction and obstruction to flow.

The oil filter was disassembled and did not display any evidence of foreign contamination or metallic fragments.

The induction air filter did not display any debris.

The three bladed constant speed propeller remained attached at the crankshaft flange. All three blades remained attached to the hub. One blade was bent aft at the blade root, another was bent

aft at the blade tip and the third blade was straight. The propeller governor was attached at its mounting pad and the pitch control rod was still attached at the control wheel.

The oil suction screen and oil filter were free of debris. The oil filter was unremarkable.