



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

Accident DATE:

AIRFRAME AND ENGINE EXAMINATION

WPR20LA238

This document contains 17 embedded photos.

A. ACCIDENT

Location: West Jordan, Utah
Date: July 26, 2020
Aircraft: PA-32R-300
NTSB IIC: Fabian Salazar

B. EXAMINATION PARTICIPANTS:

Damian Galbraith
Air Safety Investigator
Piper Aircraft
Vero beach, FL.

Stephen A. Grover
Air Safety Investigator
Federal Aviation Administration
Salt Lake City
Salt Lake City, Utah

Mark Platt
Sr. Air Safety Investigator
Lycoming Engines
Phoenix, AZ

C. SUMMARY

The IIC did not travel to the accident site due to COVID-19 travel restrictions. Examination of the airframe and engine was conducted at the accident site in West Jordan, Utah by party members from Piper and the FAA. A Postaccident fire destroyed much of the evidence.

D. DETAILS OF THE INVESTIGATION

Airframe Examination. The airplane came to rest in a back yard of a private residence. The airplane was found resting on its left side. A post-accident fire destroyed much of the airplane. The first point of probable impact was a tree and a roof edge on a house northwest of the main wreckage.

Cockpit Documentation. The cockpit was not thermally damaged forward of the front seats. Aft of the front seats, the cabin was thermally damaged. The top of the cabin was absent, likely removed by first responders. The left pilot's seat remained attached to the floor rails. The seat belts remained attached to their mounts. The front right seat remained attached to the floor rails. The left and right control yokes remained attached to the instrument panel but exhibited different control positions. The left control yoke pointed left about 45°. The right control yoke was pointed left about 120°.

along with parts of the cabin area cut away by first responders. The instrument panel remained attached to the fuselage and exhibited little thermal damage. The pilots flight instruments were an electronic flight instrument system comprised of two screens and a Garmin 696 GPS in the center position. Instrumentation was as follows:

Battery/alternator: Off
Electric fuel pump: On
Strobes: On
Landing light: On
Pitot heat: Off
Avionics master switch: On
Autopilot: Off
Electric trim: Off
Magneto switch: Off
Cabin fan: Off
Throttle quadrant: Throttle: forward/open, Mixture: forward/rich, propeller: forward/high
Hobbs meter: 3107.3 hours
Airspeed indicator: Missing the dial. No witness marks.
Attitude indicator: about 25°nose down and about 45°left turn.
Altimeter: 950 ft msl, 30.10" hg
Landing gear handle: Up
Most circuit breakers were open/out
Flap handle: 10°/first notch

The cabin area aft of the front seats was thermally destroyed.

The right wing separated from the fuselage at the root and was in the wreckage area about 30 feet from the main wreckage. The right wing was thermally damaged throughout with the most thermal damage near the mid-section outboard. The aileron remained to the wing at the mounts. The aileron control cables remained attached to the aileron bellcrank and exhibited broomstraw separation at the wing root. The flap remained attached to the wing and the position could not be determined. The right main landing gear remained attached to the wing and appeared in the up/retracted position. The fuel cap was secured in the receptacle.

The left wing separated from the fuselage at the root and was thermally destroyed. The wing was located about 40 feet from the initial tree contact. The landing gear was in the up position. The aileron and flap were thermally destroyed. The aileron control cable remained attached to the bellcrank and was separated at the wing root. The aileron control cables exhibited a broomstraw appearance.

Empennage. The vertical stabilizer remained attached to the fuselage and was thermally damaged. The rudder remained attached to the vertical stabilizer and was thermally damaged. The rudder control cables remained attached to the rudder and continued to the rudder pedals. The stabilator remained attached to the fuselage and exhibited damage to the mount. Damage to the leading edge was noted. The stabilator control cables remained attached to the balance weight mast and continued to the T-bar. The trim barrel exhibited nine threads, consistent with a

partial nose-up position. The trim control cables were continuous from the trim barrel to the trim wheel.

Engine. The engine was examined at the accident site and at a secured facility afterwards. The engine remained attached to the firewall by the mount. The accessory section was thermally damaged. The engine rotated by hand and contained on the dip stick. A fluid consistent with aviation gasoline was present from the fuel divider to the servo. The exhaust system remained attached to the cylinder exhaust ports. The throttle, mixture, and propeller controls remained attached to their respective attachment points. No obstructions were found in the air box. There was no evidence of an inflight fire.

Off accident site examination of the engine revealed the engine was verified to be an IO-540-K1G5D, serial number: L21528-48A. The constant speed propeller was a Hartzell HC-C3YR-1RF, serial number: DY5000B.

The top spark plugs were removed, and the engine rotated by hand. Thumb force compression was noted on all 6 cylinders. The valve train operated in the proper order. Normal lift action was observed at the rocker arms. The bottom spark plugs were removed. The cylinders were examined using a lighted borescope. The cylinders appeared undamaged and there was no evidence of internal foreign object damage. The valves appeared undamaged. There was no evidence of valve to piston contact. The gas path and combustion signatures were consistent with normal operation. The exhaust and muffler system was free of obstructions.

The propeller remained attached to the engine. All three blades exhibited chord-wise bending about mid-span. Two blades exhibited S-type bending. The spinner was damaged. The propeller governor remained attached to its mount with the pitch control rod attached to the control wheel. The drive was intact and free hand rotation. The screen was clear of contamination.

The injector inlet and the main fuel strainer were clear of contaminants. The flow divider exhibited no fuel evidence, and the diaphragm was intact. Fuel injector lines were secure. The fuel servo remained attached to the plenum. The serrated interface at the throttle and mixture arm remained secure. The fuel servo inlet screen was properly installed and contamination free. The fuel servo and induction system were free of obstruction.

The fuel flow divider remained attached to its mount. The fuel lines remained secure at each fitting and fuel injector on each cylinder. There was no evidence of any internal malfunction or obstruction. The diaphragm was soft and pliable. The fuel pump remained attached to the engine at the mount. The fuel lines remained secured at their fittings. The fuel pump remained free of internal mechanical failure and obstruction.

The single-drive dual magneto remained attached to the engine at its mount. The impulse coupling was heard during rotation. The magneto to engine timing was found at 19° before top dead center of the number 1 cylinder, for the left and right magnetos. The magneto produced spark at all 12 spark plug leads.

The top spark plugs exhibited severely worn electrodes on the top number 1, 3, 4, and 6 spark plugs, and severely worn electrodes on the bottom 2, and 3 spark plugs. According to the engine manufacturer representative, the sparkplug electrodes, while severely worn, were still capable of producing a spark.

The ignition leads were thermally damaged but remained attached to the magneto and the spark plugs.

The starter and alternator were both secured to their mounts. The vacuum pump remained attached to its mount and turned during hand rotation of the crankshaft.

The oil suction screen and oil filter were removed. The suction screen contained some carbon fragments. The oil filter was cut open and exhibited no pre-accident debris. There was no evidence of pre-accident metal contamination at the rocker boxes.

Three components were retained by the FAA and handed over to the NTSB for further examination. The components were shipped to the NTSB Recorder Laboratory.

1. A JPI 930 Engine data monitor, S/N: 01526
2. A Garmin 696, S/N: 1H7003079
3. An iFly GPS, S/N: ZZ20030163

PHOTO EXHIBIT



Figure 1. First points of probable impact, a tree, and a roof. Photo courtesy of Piper Aircraft.



Figure 2. Front-top view of N7677C at accident site. Photo courtesy of Piper Aircraft.



Figure 3. Front lower view. Photo courtesy of Piper Aircraft.



Figure 4. Underside view. Photo courtesy of Piper Aircraft.



Figure 5. Rear view. Photo courtesy of Piper Aircraft.



Figure 6. Cockpit view, showing the throttle quadrant and the flap handle. Photo courtesy of Piper Aircraft.



Figure 7. Underside of the right wing, showing leading edge, landing gear, and flap. Photo courtesy of Piper Aircraft.



Figure 8. Under side of the right wing, showing the flap. Photo courtesy of Piper Aircraft.



Figure 9. Right wing, as seen from the wing tip. Photo courtesy of Piper Aircraft.



Figure 10. Right wing and rear-view of the empennage. Photo courtesy of Piper Aircraft.



Figure 11. Left wing. Photo courtesy of Piper Aircraft.



Figure 12. Left main landing wheel brake assembly. Photo courtesy of Piper Aircraft.



Figure 13. Rear view of the empennage. Photo courtesy of Piper Aircraft.



Figure 14. Rear view of the top-side of the airplane. Photo courtesy of Piper Aircraft..



Figure 15. Underside view, showing the retracted nose landing gear. Photo courtesy of Piper Aircraft.



Figure 16. Fuel filter screen. Photo courtesy of Piper Aircraft.

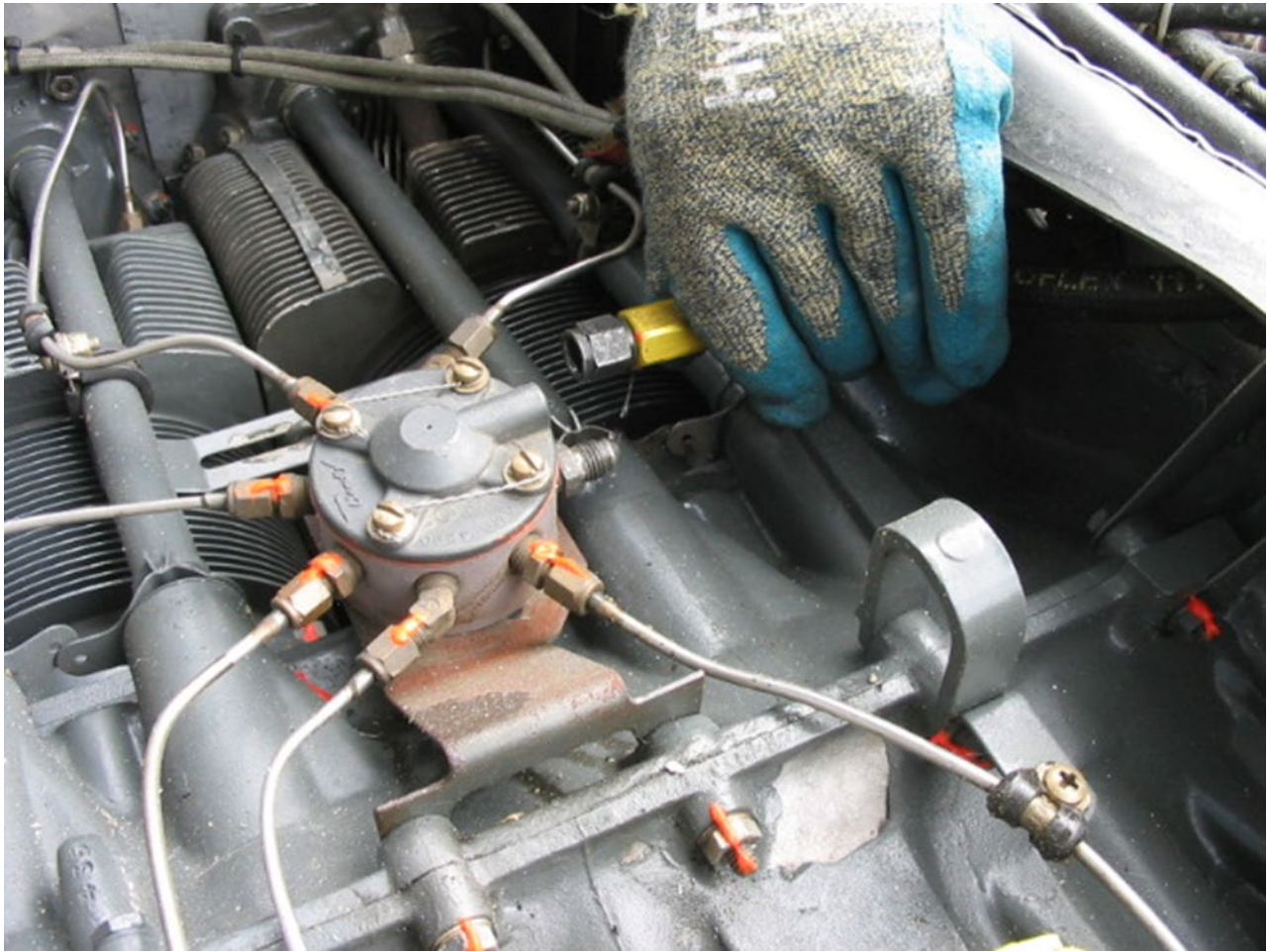


Figure 17. Fuel flow divider. Photo courtesy of the Piper Aircraft.