



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

December 15, 2021

Airframe and Engine Exam

WPR20LA223

This document contains 22 embedded photos.

A. ACCIDENT

Location: Vaughn, New Mexico

Date: July 15, 2020

Aircraft: Piper PA-30 / N8488Y

NTSB Investigator-in-Charge: Zoë Keliher

B. PARTICIPANTS

Fabian Salazar

ASI, WPR

NTSB

Federal Way, WA.

James Bledsoe

ASI, WPR

NTSB

Federal Way, WA.

Mark Platt

Sr. ASI

Lycoming Motors

Phoenix, AZ.

Kathryn Whitaker

ASI

Piper Aircraft

Phoenix, AZ.

Significant Examination finding:

- The right engine was test run and functioned normally.

AIRFRAME

General observations. The airframe was positioned onto a stand without the wings attached. The left engine was not examined.

FUSELAGE

The right nose area exhibited substantial damage just aft of the composite material nose cap. The damage ran from the mid-section down to the nose wheel bay. The remaining right-side fuselage exhibited only minor damage back to the empennage, except for an area just aft of the trailing edge of the wing where there was substantial damage to the fuselage running underneath the fuselage to the left side. The right-side door remained attached to the fuselage at the hinges.

The left side of the fuselage from the empennage to the nose of the airplane exhibited little to no damage, except for an area of substantial damage just aft of the cargo door, that ran underneath the fuselage to the right side.

The upper surface of the fuselage exhibited little to no damage.

The underside of the fuselage exhibited an area of substantial damage running from left to right, as described in earlier paragraphs. The nose wheel area sustained substantial damage with fracturing of the composite nose cone and crushing of the fuselage around the nose wheel well. The left nose wheel door separated from the fuselage and the right nose wheel door remained partially attached by one hinge.

WINGS. Both wings were removed for recovery and placed on stands for examination.

The right wing sustained substantial damage about 48 inches from the engine nacelle. The outer 48 inches of wing and the aileron separated from the wing and sustained substantial damage. A large contact point was observed that crushed the wing material aft beyond the wing spar. The right aileron separated from the wing segment at the hinges. The tip of the wing sustained minor damage. The aileron control tube remained attached to the aileron bell crank. The right flap remained attached to the wing section that remained attached to the fuselage. The flap appeared to be in the full up position. The right fuel tank cap remained secured to the tank. The rubber seal was present but did not provide the security necessary to remain in place. It was easy to remove the cap after it had been secured. The sheet metal cover kept the cap secure to the plane. The engine nacelle sustained minor damage with dents and scratches on the top side.

The left wing sustained minor damage throughout. There was a minor dent located on the leading edge inboard of the engine nacelle. There was a dent to the firewall of the left engine nacelle at the bottom left area. The flap remained attached to the wing at the hinges and appeared to be in the full up position. The aileron remained attached to the wing at the hinges and moved up and down to the limits. The engine nacelle appeared to have sustained little to no damage.

EMPENNAGE

The right side of the empennage exhibited minor damage. The right stabilator remained attached to the empennage and exhibited minor damage to the underside. The right trim remained attached to the right stabilator, exhibited no damage, and appeared in the full down position. The vertical stabilizer remained attached to the fuselage and exhibited no damage to the right or left side. The rudder remained attached to the vertical stabilizer and exhibited no damage to the right or left side. The rudder moved to the left and right limits. The left stabilator was separated from the empennage and recovered. The stabilator exhibited substantial damage to the leading edge on the underside running chordwise. The left trim remained attached to the stabilator at the hinge and was removed from the trim control tube at the attachment point. It was not confirmed that the left stabilator may have been removed for recovery.

LANDING GEAR

The right main landing gear remained attached to the right wing and was found in the retracted position.

The left main landing gear remained attached to the left wing and was found in the retracted position.

The nose gear remained attached to the fuselage and was substantially damaged. The nose wheel had separated from the nose gear.

PROPELLERS

The left propeller was not examined.

CABIN

The cabin area was undamaged and examined by Piper Aircraft.

FLIGHT CONTROL CONTINUITY

Flight control continuity was confirmed from the control yoke to the cuts at the root of the wings, then from the cuts at the roots of the wings to the aileron on the left wing and to the break in the control cable in the right wing.

Control continuity was confirmed from the control yoke to the stabilator, and from the rudder pedals to the rudder.

The throttle controls were disconnected for recovery.

Rudder trim was in neutral.

The stabilator was trimmed partially nose down.

FUEL SYSTEM

The fuel system was examined by Piper Aircraft. Enclosed are the highlights of the fuel system examination.

- Both fuel tanks were unremarkable
- Both main tank fuel caps were worn and did not stay secured when pulled with light force
- The right aux tank had about ½” to ¼” fuel
- There was a small amount of fuel in the right aux-tank fuel line
- There were not fuel line blockages from the tanks, at the wing root to the firewall
- Fuel was found in the right tank selector bowl.
- No contaminants were found in the fuel
- Right fuel selector switch functioned normally with light air pressure applied
- All lines to both fuel selectors were tight
- The electric fuel pumps were normal in their appearance

ENGINES

The left engine was not examined.

The right engine was examined and was determined to be test run. Prior to the test run the following items were confirmed.

- Removed the spark plugs and noted no mechanical damage and uniform coloration.
- Thumb-force compression verified on all cylinders.
- All cylinders were borescope inspected for condition and FOD.
- Checked and verified the timing was 25° BTDC of the #1 cylinder
- All engine controls were secure at their respective linkages.
- All fuel system lines, and B-nuts were secure.
- Fuel inlet finger screens of the fuel injection servo were checked and found clear.
- Engine oil was clean and at the correct level.
- A general overall inspection of the engine showed no evidence of a malfunction.
- Exhaust tailpipe color was light gray and free of oil.

The engine was test run by the Party Member from Lycoming. See the engine report for further details. Highlights of the engine runs are as follows

- The first engine run was successful. The engine started right away and ran normally. The propeller was verified to feather normally. The engine was shut down so that the propeller could be removed, and an exemplar propeller could be fitted to bring the engine up to an RPM that would allow the magnetos to be tested.
- The propeller could not be removed. The propeller was manually straightened.

- The engine was run a second time and a fluid was observed coming out of the fuel distribution manifold (spider). The engine was shut down and the spider was examined. The fluid was determined to be water and the unit was reassembled. The engine was run a third time.
- The magnetos test normally.

PHOTO ARRAY



Photo 1. Front right view of fuselage.



Photo 2. Right view of fuselage and left wing.



Photo 3. Right-rear view of the fuselage and left- wing spar.



Photo 4. Right wing.



Photo 5. Right wing, outboard end.



Photo 6. Right wing and tip.



Photo 7. Right wing with aileron.



Photo 8. Left wing engine firewall.



Photo 9. Left wing with damage to the leading edge.



Photo 10. Empennage, right side.



Photo 11. Right stabilator



Photo 12. Left stabilator, top side.



Photo 13. Left stabilator, under side.



Photo 14. Right side of fuselage, showing damage to underside.



Photo 15. Left side of fuselage, showing damage to underside.



Photo 16. Right side of fuselage, showing damage to the nose cone and nose gear bay.



Photo 17. Left side, showing damage to the nose gear bay area.



Photo 18. Instrument panel.



Photo 19. Fuel selector switches.



Photo 20. Hobbs meter.



Photo 21. Elevator trim jackscrew.

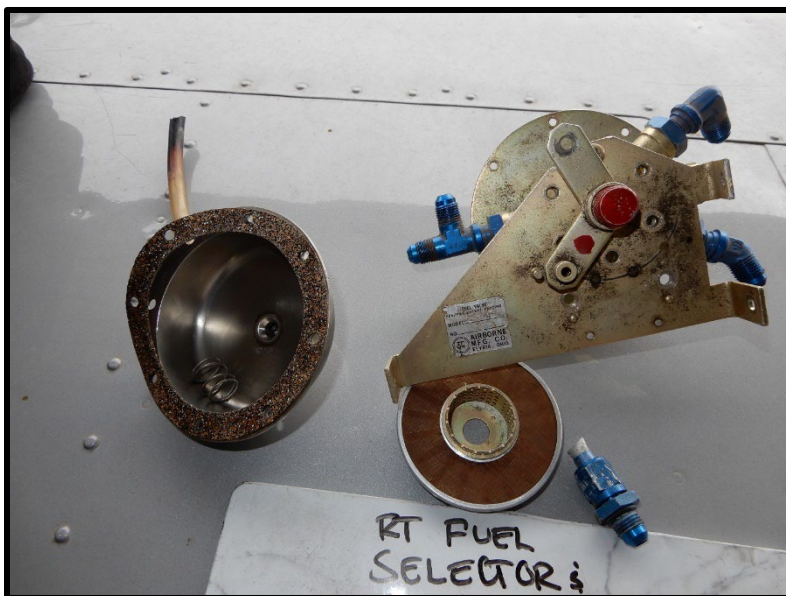


Photo 22. Right-side fuel selector.