

# National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR25LA071

## **AIRFRAME AND ENGINE EXAM**

February 26, 2025

## **A. ACCIDENT**

Location: Gallup, New Mexico  
Date: 12/27/2024  
Time: 2103 MST  
0403Z  
Airplane: 1976 Cessna T210L

## **B. AIRFRAME AND ENGINE EXAM**

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## **C. SUMMARY**

On December 27, 2024, at 2103 mountain standard time, a Cessna T210L, N505SW was substantially damaged when it was involved in an accident near Gallup Municipal Airport (GUP), Gallup, New Mexico. The pilot and one passenger were not injured. The aircraft was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the pilot, as the airplane entered the base turn to land on runway 24 at GUP, she noted the airplane was descending faster than expected and added engine power; however, the engine did not respond. The pilot verified the position of the engine controls and fuel selector and noted each fuel tank appeared to be half-full. The pilot stated they were unable to reach the runway and initiated a forced landing in a vacant lot about 1,800 ft west of runway 24. During the forced landing, the airplane impacted power lines and rough terrain, which resulted in substantial damage to the right wing and fuselage. (See Fig. 1)



Fig. 1: The airplane at the accident site. (Courtesy of the FAA)

## **D. DETAILS OF THE INVESTIGATION**

### **1.0 Accident Site**

The airplane came to rest in a vacant lot. The first identified point of impact was a shallow crater in the sandy soil that contained fragments of airplane wreckage. Furrows similar in spacing and arrangement to the landing gear wheels were present between the crater and the airplane main wreckage. The airplane's nose landing gear had separated and was found in the furrows. The left main landing gear was bent outboard and aft, and the right main landing gear remained down. The flaps were down. The fuel gauges read zero with the battery master on, and the fuel selector was set to the left fuel tank.

According to the airport manager and an FAA inspector who attended the scene, the pilot stated she did not have a fuel dipstick for the airplane. The airplane was moved using a flatbed tow truck to a parking lot adjacent to the airport property. A broomstick was used to examine the fuel level in the wing fuel tanks before and after the airplane was moved; according to the airport manager, no fuel could be observed when dipping the left tank, and a small amount of fuel remained on the stick when dipping the right fuel tank.

During recovery of the airplane, about 3 or 4 ounces of fuel were drained from the left wing fuel tank, and about 16 ounces was drained from the right wing fuel tank.

## 2.0 Airframe Examination

The airplane's wings, horizontal stabilizer, and rudder had been removed during recovery. The airplane fuselage had been mounted to a trailer to facilitate an engine run.

### 2.1 Fuselage

The lower forward fuselage had been crushed up and aft. The lower engine cowl was crushed. The windscreen was cracked and broken along the lower left corner. The lower fuselage adjacent to the main landing gear well was buckled. The nose keel beams were deformed, and the engine was canted nose down. (See Fig. 2)



Fig. 2: The fuselage viewed from the left.

### 2.2 Empennage

The rudder, horizontal stabilizer, and elevators had been removed during recovery. The empennage appeared undamaged.

### 2.3 Wings

The wings had been removed during recovery. The left wing appeared undamaged. The right wing displayed an area of crushing on the leading edge. The right wing crush impression displayed features similar in appearance and arrangement to an impact with a power transmission wire.

## 2.4 Landing Gear

The nose gear was fracture separated from the upper strut. The right main landing gear was retracted, and the left main landing gear was partially extended and bent aft.

## 2.5 Cockpit

The instrument panel appeared undamaged. The Primary Flight Display and radios had been previously removed.

| Desc.              | Position |
|--------------------|----------|
| Batt master        | Off      |
| Alternator         | Off      |
| Aux Fuel Pump      | Off      |
| Post Lights        | Off      |
| Pitot Heat         | Off      |
| Exterior Lights    | On       |
| Altimeter Kollsman | 29.95    |
| Gear Handle        | Down     |
| Tach Hours         | 3815.1   |
| Flap Selector      | Up       |

## 2.6 Fuel/Fuel System

The left wing fuel cap remained mounted within the fuel filler; its gasket appeared intact. The left fuel vent valve and line were tested with low air pressure and no blockages were noted. No FOD was observed in the interior of the tank. The wing rib weep holes on the interior were not blocked by tank sealant. The fuel tank outlet screens were free from blockage.

The left collector tank was deformed, with fuel staining observed along the top. The collector tank was removed, and about 22 fl oz of fuel was drained from it. The fuel line from the left collector tank to the fuel selector was crushed

The right wing fuel cap remained mounted within the fuel filler; its gasket appeared intact. The right fuel vent valve and line were tested with low air pressure and no blockages were noted. No FOD was observed in the interior of the tank. The wing rib weep holes on the interior were not blocked by tank sealant. The fuel tank outlet screens were free from blockage.

The right collector tank appeared undamaged. After the engine was run, about 13 fl oz was drained from the collector tank.

### **3.0 Engine Examination**

The engine and accessories appeared free from impact damage. The accessories remained secure to their respective mounting pads. The induction air filter was not blocked. The alternate air door opened when light pressure was applied. The oil dipstick showed about 6 qts of oil. The throttle, mixture, and propeller governor controls could be moved stop-to-stop using the control knobs. The top spark plugs were removed; they displayed conditions consistent with "normal wear" and "carbon fouled" when compared to the Champion Check-a-Plug Chart AV-27. Thumb compression and suction was noted on all cylinders when the crankshaft was rotated by hand.

### **4.0 Propeller Examination**

The three-bladed propeller remained mounted to the engine crankshaft flange. One propeller blade was bent aft about 45° at midspan and displayed polishing to the leading edge and the blade back. One propeller blade displayed a very slight aft bend with polishing to the leading edge and blade back. One propeller blade appeared unbent with areas of chipped paint similar in appearance and arrangement to an impact with a power transmission wire.

### **5.0 Engine Ground Run**

The original propeller blades were bent, rendering it unsuitable for use during engine run; it was removed and replaced with a surrogate. The damaged fuel line between the left collector tank and the fuel selector was removed and a temporary fuel can was plumbed into the left inlet of the fuel selector and the fuselage was mounted to a flatbed trailer. The engine started without hesitation, could attain 2,700 RPM, and idled at about 700 RPM. The mag drops were 75/100.

The fuel selector was moved to the right fuel tank position, causing fuel to be drawn from the right collector tank. The engine ran for another 6 minutes at about 1800 RPM. (See Fig. 3.)



Fig 3: The airplane mounted on a trailer with the engine running.

## 5.1 Fuel System Testing

The wings were each raised using a forklift and moved adjacent to their respective wing roots. (See Fig 4.) The wiring for the fuel quantity indicators was reconnected, and the wings were situated to simulate dihedral. Fuel was added to each wing fuel tank in increments, and the corresponding fuel gauge was read at each increment. The following observations were made:

| Fuel Added to Each Tank | Reading on Left Gauge | Reading on Right Gauge |
|-------------------------|-----------------------|------------------------|
| Empty                   | 0                     | 0                      |
| 5 gallons               | 4 gallons             | 5 gallons              |
| 15 gallons              | 9 gallons             | 14 gallons             |
| 20 gallons              | 17 gallons            | 20 gallons             |



Fig 4: Airplane with left wing raised to fuselage and leveled.

## 6.0 Aircraft Information

Airplane- 1976 Cessna T210L

SN 21061185

Tach-3815.1

Engine Manufacturer: Continental

Engine Model Number: TSIO-520-H

Engine Serial Number: 217349

Propeller Manufacturer: Hartzell

Propeller Model Number: HC-J3YF-1RF

Propeller Serial Number: JN1068B

100 hour / Annual inspection conducted: September 9, 2024, at 3650.3 AFTT

Submitted by:

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Aircraft Accident Investigator