

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR23FA188

AIRFRAME AND ENGINE EXAMINATION REPORT

May 15, 2023

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A. ACCIDENT

Location: Albany, Wyoming
Date: May 14, 2023
Time: 1135 Mountain daylight time
Airplane: N665B, Cessna T182T

B. AIRFRAME AND ENGINE EXAMINATION REPORT

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C. SUMMARY

On May 14, 2023, about 1135 Mountain Daylight Time, a Cessna T182T, N665B was destroyed when it was involved in an accident near Albany, Wyoming. The pilot and passenger were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

On May 15, 2023, the IIC travelled along with the party members from Textron and Lycoming to the accident site to begin the investigation. After the field examination was completed, the IIC and party members travelled to Greeley, Colorado to continue the examination of the airframe and engine. Upon completion of the examination, it was determined that there were no mechanical malfunctions or failures with the airframe or engine that would have precluded normal operation. One cell phone, an Appareo Stratus, and a JP Instruments Engine Data Monitor were retained for further examination.

D. DETAILS OF THE EXAMINATION

1.0 Accident Site

The airplane impacted terrain about 30° nose low, wings level at N41° 26' 19.2" W106° 03' 36.8", at an elevation of 8,082 ft msl, on a magnetic heading of 360°. The first point of probable impact was immediately under the nose of the airplane. All major components remained with the fuselage, except for one propeller blade. The fuselage sustained multiple substantially damaged components.

2.0 Airframe Examination

The airframe was examined by the party member from Textron Aviation, Lycoming Engines, and the IIC.

2.1 Fuselage

All four corners of the airplane remained attached to the fuselage at the accident site. The fuselage exhibited substantial crushing, and deformation throughout. The nose structure and engine were crushed aft into the cockpit instrument panel. The cockpit bottom skin structure was crushed aft to the landing gear bulkhead assembly. The top cockpit and cabin/baggage skin structure shifted forward where the rear cabin window was in the cockpit. Part of the tail section was displaced forward and canted to the left tearing and opening the tail bottom skin structure from about F.S. 172.00 to F.S. 199.00. The tail cone remained attached to tail section. The empennage remained attached to the tail section. Both cabin doors and the baggage door exhibited aft crushing.



Figure 1.N665B front view. while at the accident site front.

2.2 Empennage

The empennage was displaced and canted to the forward left. The horizontal stabilizers remained attached to the fuselage and exhibited minor damage. The elevators remained attached to their respective stabilizers and exhibited minor damage. The vertical stabilizer remained attached to the tail structure and displayed dents to the leading edge. The rudder remained attached to the vertical stabilizer and exhibited minor damage. The rudder flight control cable continuity was established from the aft bell crank to the cockpit. Cable continuity at the left and right rudder bar assembly could not be confirmed due to the cockpit damage.



Figure 2. Underside view of the left horizontal stabilizer and elevator. Source Textron.



Figure 3. Underside view of the right horizontal stabilizer, elevator, and trim. Source Textron.



Figure 4. Right side view of the vertical stabilizer and rudder. Source Textron.

2.3 Wings

Aileron flight control cable continuity was confirmed from each wing aileron bellcrank to the cockpit. The elevator flight control continuity was confirmed from the cockpit to each flight control surface.

The left and right flaps and flap motor/actuator were found in the full retracted position. The elevator trim actuator was measured and found to be about $\frac{3}{4}$ " extension, which correlates to about 15° tab down or nose up.



Figure 5. Underside view of the right wing. Source Textron.



Figure 6. Underside view of the left wing. Source Textron.

The right wing exhibited hydraulic deformation consistent with fuel in the tank. The right-wing fuel cap separated from the wing and was found near the wing. The left wing exhibited some hydraulic deformation, and an automotive-style fuel cap was found installed. The cap was loosely attached. Both bottom wing leading edges exhibited aft buckling, while the top surface skin displaced forward. The right-wing front spar was found face down. Both wings remained attached at their respective attachment points. Both ailerons remained attached to the wings at their respective attachment points. Both flaps remained attached to the wings at their respective attachment points. The right-wing strut separated from the airplane about mid-span. The left-wing strut remained attached to the fuselage and wing at the attachment points.



Figure 7. Top view of the left and right wings and empennage. Source NTSB.

2.4 Landing Gear

The main landing impacted the terrain, creating deep impressions into the soil and did not move forward. The nose landing gear and the engine created a mound of dirt that was projected forward of the airframe. The nose gear was damaged and was displaced aft to about mid-length of the fuselage.

2.5 Cockpit

The pilot and passenger were wearing the lap belt and shoulder harness. The control yokes were fragmented and pushed up and forward. The control yoke horns were fractured and separated. The rudder pedals were displaced aft and downward, impact damaged, and separated. The elevator trim wheel was fractured and laying loose in the cockpit area. The throttle quadrant was impact fractured and bent forward. The ignition key was broken and found in the BOTH position Both seats remained attached to their respective attachment points but were extensively

damaged. The rear seat had displaced forward up to the front seats and pinned the occupants.

The rear baggage area and the rear bench seat were loaded full of personal items, that weighed a total of about 310 pounds. The Engine Data Monitor (JPI EDM-700, Serial Number: 167#5), Stratus (Serial number: 230982), passengers cell phone (iPhone 11 Pro), and a Garmin GPS module were recovered and retained for further examination. The ELT fractured but remained in the tail and was found in the armed position. The bottom of the fuselage impacted terrain and exhibited aft crushing. The instrument panel was fragmented. and most all the instruments were impact damaged. The windshield was shattered.

The attitude indicator exhibited impact damage. After the recovery, the internal components had fallen out of the indicator case. The gyro case was fractured into two halves. One of the case halves exhibited a gouge mark on the inner section.



Figure 8. Case for the attitude indicator and the remaining internal components. Source Textron.

2.6 Survivability

The survivability space of the cabin was greatly reduced because of the aft movement of the engine, upward crushing of the floor, downward crushing of the ceiling and forward movement of the cargo.

2.7 Fuel/Fuel System

The fuel selector valve handle, shaft, and fitting assembly were separated. The rotor shaft was separated and bent. The fuel selector valve was removed from the airplane and found to be ported to the left-wing fuel tank position. The wing tanks were breached because of the impact. The fuel strainer was removed from the firewall and disassembled. The filter was found clean with no debris and no evidence of fuel was found inside the bowl.

2.8 Other Systems.

3.0 Engine Examination

A visual inspection conducted at the accident site revealed that the engine was displaced aft into the cockpit. The engine was relocated to a secure facility where the following observations were made.

- Engine was found secured to the engine mounts.
- Fuel servo inlet screen was found to be clear and unobstructed.
- Fuel flow divider was clear, and diaphragm was intact. Flow divider had some residual fuel in it.
- Fuel pump when operated by hand was producing suction.
- Both magnetos were impact damaged and the cases were dislodged. Neither magneto would rotate.
- The top spark plugs were removed. The top spark plugs looked normal when compared to the Champion Aviation Check-A-Plug Chart (AV-27).
- Propeller governor was impact damaged and the input shaft sheared.
- The fuel servo separated from the intake manifold, The throttle and mixture rod ends remained attached to the respective arms. The brass nut was secure and snug. The fuel inlet screen was clear and unobstructed. The fuel servo housing was cracked and distorted. The throttle plate was captured.
- Both vacuum pumps were disassembled, and both rotors were found cracked. All the vanes were intact and in one piece.
- The accessory gears were intact. The accessory gear housing was fractured.
- The engine driven fuel pump pressure was rotated, and suction was present.
- Oil filter was impact damaged (crushed).
- The turbo charger cold-air side nut was loose. The compressor would not rotate. The cold-air side turbine blades exhibited leading edge damage.

- The crank shaft would rotate by hand. Piston movement was observed in all cylinders. The cam shaft was rotated by hand and lifter movement was noted in all cylinders.
- Engine oil sump was fractured apart.
- All fuel injectors were found clear.
- All valve springs and rocker arms were inspected and found normal.
- The alternator was fractured from the engine.
- Waste gate mounting flange was broken off.
- No visual damage to the waste gate was observed.
- The turbocharger controller was broken apart and the lower section was missing.
- Multiple push rods were bent.
- Exhaust components were crushed upwards.
- All engine mounts were broken.



Figure 9. Engine after removal from airframe. Source Textron.

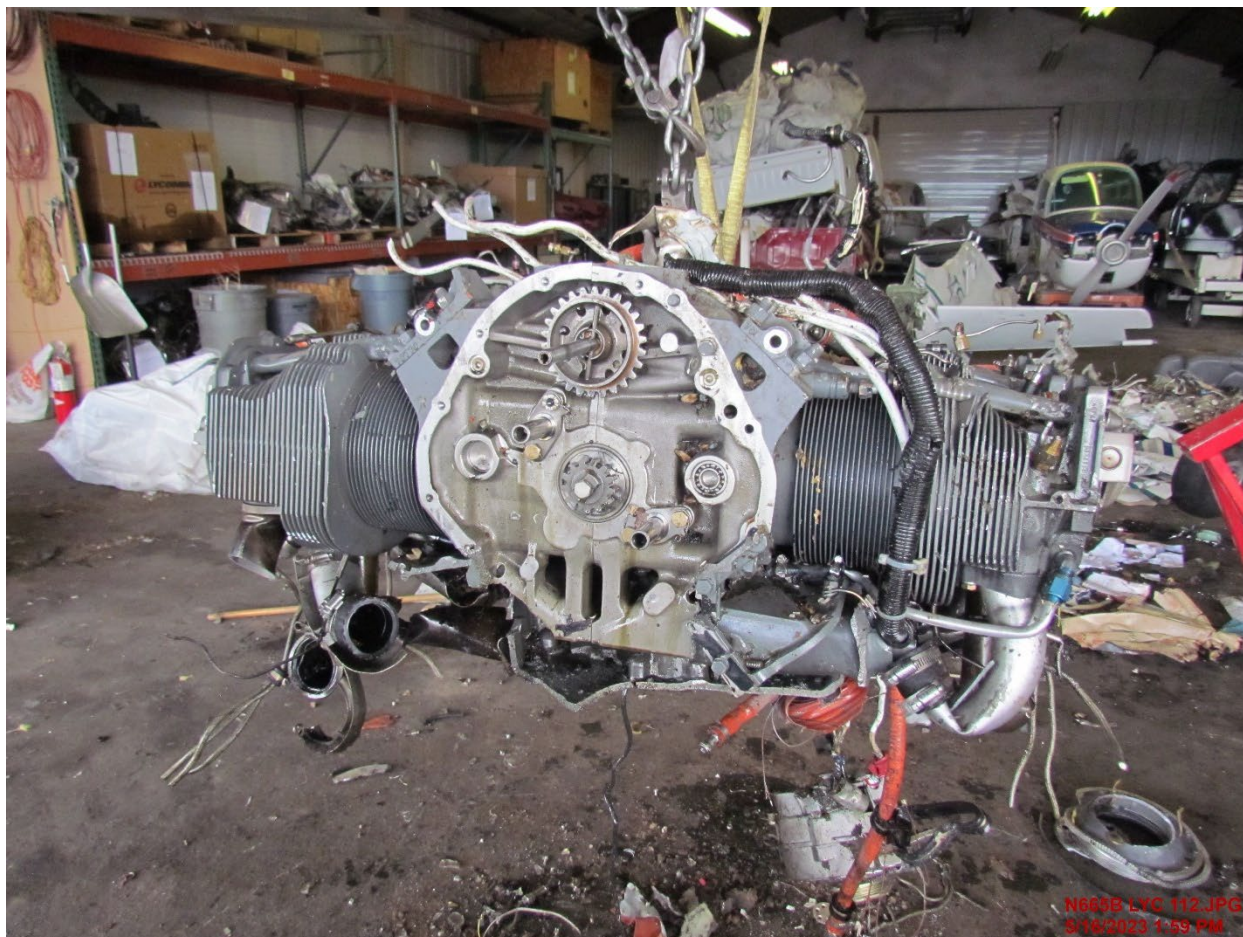


Figure 10. Engine examination while at secure facility. Source NTSB.



Figure 11. Left-side view of engine and the propeller blades. Source NTSB.

4.0 Propeller Examination

The propeller hub was fragmented but remained attached to the engine crankshaft propeller flange. One propeller blade exhibited leading edge gouging, and chordwise striations. a second propeller blade exhibited chord-wise striations and the tip exhibited minor damage. A third propeller blade exhibited leading edge gouging, and chordwise striations, and tip curling. The spinner was fragmented and impact damaged.



Figure 12. Propeller blades while at the accident site. Source NTSB.

5.0 Cargo

The contents of the airplane were collected and weighed. The total weight of the cargo was 310 pounds, as shown in figure 13.



Figure 13. Cargo from the accident flight. The scale indicates 310 pounds. Source NTSB.

6.0 Aircraft Information

The airplane was a Cessna T182T single engine land, fixed wing, serial number T18208011, manufactured in 2001. The airplane was equipped with a Lycoming, TIO-540-AK1 engine, serial number RL-13594-61A.

7.0 Meteorological Information

A weather study has been received by the NTSB.

Submitted by:

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