

National Transportation Safety Board
Office of Aviation Safety
Washington, DC 20594



WPR22FA332

ENGINE AND AIRFRAME EXAMINATION

September 7, 2022

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A. ACCIDENT

Location: Galt, California
Date: September 4, 2022
Time: 0840 Pacific Daylight Time
1540 Universal Coordinated Time
Airplane: Beech 58 / N142DR

B. ENGINE AND AIRFRAME EXAMINATION

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C. SUMMARY

The airplane was recovered to a secure storage facility in Pleasant Grove, California, where the IIC and party members conducted further examination of the wreckage. The airplane fuselage was cut into sections consisting of the nose section which included the instrument panel, the cabin and wings section, the aft fuselage section, the empennage section, and the engines.

D. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

Flight control continuity was established from all control surfaces to their respective flight controls in the cockpit. All breaks in the control cables, rods and bellcranks were consistent with overload forces.

2.0 Fuselage

The fuselage had been cut into four sections during recovery, nose, cabin & wings, aft-fuselage, and empennage.

The fuselage exhibited substantial damage throughout. The forward section, from the nose to the cabin exhibited very little aft crushing but extensive upward crushing from

the bottom and downward crushing from the top. The windscreen was shattered and absent from the fuselage. The cabin structure was damaged but not displaced downward. When the airframe was lifted for recovery, the fuselage had a flattened appearance that ran from the nose to just aft of the trailing edge of the wings. From that point aft, the sides of the fuselage exhibited significant upward crushing and sheet metal displacement.

The cabin and mid-section of the fuselage exhibited the same upward crushing. The top of the mid-section exhibited considerably less damage than the bottom section. There was a large crack that ran across the top of the cabin section roof.

The belly of the fuselage exhibited extensive and substantial upward crushing to include rips and tears of the sheet metal.

3.0 Empennage

The empennage remained attached to the aft fuselage but was cut for recovery. It exhibited significantly less damage than the fuselage. The horizontal and vertical stabilizers remained attached to the fuselage. The elevators remained attached to the horizontal stabilizers, and the rudder remained attached to the vertical stabilizer. Vortex generators were observed on the left side of the vertical stabilizer. The elevator bellcrank protruded out from the bottom of the fuselage.

4.0 Wings

The right wing remained attached to the fuselage. The aileron and flap remained attached to the right wing at their respective hinges. The right-wing leading edge exhibited one large wrinkle just outboard of the engine nacelle. The topside of the wing exhibited multiple downward dents. The lower side of the wing exhibited substantial upward crushing throughout the wingspan. The fuel cap was secure in the port. When opened no fuel was present. The fuel cap was secured to the wing with a chain. The seal was soft and pliable. There were vortex generators installed on the topside of the wing, aft of the leading edge. Some vortex generators were absent, with fresh paint at the install locations, consistent with a recent separation.

The left wing remained attached to the fuselage. The aileron and flap remained attached to the right wing at their respective hinges. The left-wing leading edge exhibited multiple wrinkles throughout. The topside of the wing exhibited multiple downward dents which could have occurred during the recovery process. The lower side of the wing exhibited a substantial downward bulge outboard of the engine nacelle. The fuel cap was secure in the port. When opened no fuel was present. The fuel cap was secured to the wing with a chain. The seal was soft and pliable. There were vortex generators installed on the topside of the wing, aft of the leading edge. Some of the vortex generators were absent, with fresh paint at the install locations, consistent with a recent separation.

5.0 Landing Gear

The main landing gear (MLG) remained attached to the fuselage at the two wings and were both in the up/retracted position. The MLG were lowered using the emergency gear handle. The right gear appeared intact with some damage to the mechanism. The brake assembly remained attached to the wheel and the brake line was secured to the caliper.

The left main landing gear exhibited substantial damage to the mechanism that allowed the wheel assembly to rotate. The brake assembly remained attached to the wheel and the brake line was secured to the caliper.

The nose wheel remained secured up in the wheel well and was not lowered. The substantial upward crushing of the lower fuselage allowed the nose wheel to protrude through the wheel well doors.

6.0 Cockpit

The cabin exhibited substantial damage throughout. The floor of the cabin had been crushed upward to the bottom of the seats. The control yokes were removed during recovery. The instrument panel remained attached and exhibited damage beginning at the bottom of the panel and decreasing in severity towards the top of the panel. A JP Instruments EDM 760 display was recovered from the instrument panel. The left side of the instrument panel held a two-screen electronic flight display. Three SDM cards for the electronic flight displays were recovered. One was labeled "Garmin 142DR", one "650 DR", the other "142DR" in red ink.

Airspeed indicator displayed 0 knots.

Altimeter read about 50 ft mean sea level.

Landing gear handle was in the UP position.

The right-side instruments exhibited:

Fuel quantity, ½ tank

Alcohol, anti-ice: FULL

Prop Amps: 0

All engine instruments that were intact read zero or near zero.

Left Fuel < ¼

Right fuel ½,

Alcohol, anti-ice: FULL,

Prop amps: 0.

The throttle quadrant was displaced into the instrument panel and the throttle, prop, mixture positions could not be determined with accuracy, but all, except for the right mixture, appeared to be pulled full aft. The right mixture was slightly forward of full aft.

7.0 Fuel/Fuel System

The fuel delivery system was examined. The two fuel filter screens located in the main landing gear wells both exhibited clear screens. The fuel tank drains were opened and exhibited a large amount of muddy sediment.

8.0 Engine Examinations

Engine nacelle. Both engine cowlings had been removed while at the accident site. The engines were separated from the wings at the accident site for recovery.

Left engine (number 1). The fuel pump was removed from the rear of the engine. The frangible drive was intact, and the pump appeared to have minor damage. The top spark plugs were removed and examined. All spark plugs, when compared to the Champion Check-A-Plug chart, appeared normal. The cylinders all exhibited thumb force compression. All rocker arms moved normally and about the same distance. All rocker box chambers exhibited a wet, and oil-soaked appearance. The valve train exhibited normal smooth movement. Both magnetos remained attached at their mounts and produced a spark at all terminals. The spark plug leads appeared in good condition. The oil had a clean appearance. The oil filter was not opened. The fuel flow divider was opened, and the diaphragm was intact. The screen was clear and some fluid with the consistency and smell of aviation fuel was present. All the fuel injectors were free of clogs.

Right engine (number 2). The fuel pump was removed from the rear of the engine. The frangible drive was intact, and the pump appeared to have minor damage. The top spark plugs were removed and examined. All spark plugs, when compared to the Champion Check-A-Plug chart, appeared normal but exhibited some corrosion. The cylinders all exhibited thumb force compression. All rocker arms moved normally and about the same distance. All rocker box chambers exhibited a wet, and oil-soaked appearance. The valve train exhibited normal smooth movement. Both magnetos remained attached at their mounts and produced a spark at all terminals. The spark plug leads appeared in good condition. The oil had a clean appearance. The oil filter was not opened. The fuel flow divider was opened, and the diaphragm was intact. The screen was clear and some fluid with the consistency and smell of aviation fuel was present. All the fuel injectors were free of clogs.

9.0 Propeller Examination

The left propeller and propeller flange had separated from the engine. The spinner exhibited some crushing but held its general shape. One propeller blade appeared to have partially separated from the hub and was deflected aft. All three propeller blades appeared to be in the feathered position and all three exhibited minor damage with little to no bends chordwise or spanwise.

The right propeller remained attached to the engine. The spinner exhibited considerably more aft crushing than the left and exposed the propeller hub. All propeller blades

appeared to be in the feathered position. One propeller blade exhibited a chordwise bend to the back side and no other damage. The remaining two propeller blades exhibited little to no chordwise or spanwise bending.

Submitted by:

Fabian Salazar
IIC

E. Photo Array



Figure 1. Cabin, rear, looking forward.



Figure 2. Instrument panel.



Figure 3. Fuselage, mid-section.



Figure 4. Fuselage mid-section, left-side view.



Figure 5. Empennage.



Figure 6. Empennage, Right-side view.



Figure 7. Empennage, underside-view.



Figure 8. Number 1, Left engine.



Figure 9. Number 1 engine, back-side view.



Figure 10. Number 1 engine.



Figure 11. Number 1 engine, top spark plugs.



Figure 12. Number 1 engine, fuel divider.



Figure 13. Number 1 engine fuel injectors.



Figure 14. Number 2 engine.



Figure 15. Number 2 engine.



Figure 16. Number 2 engine top spark plugs.

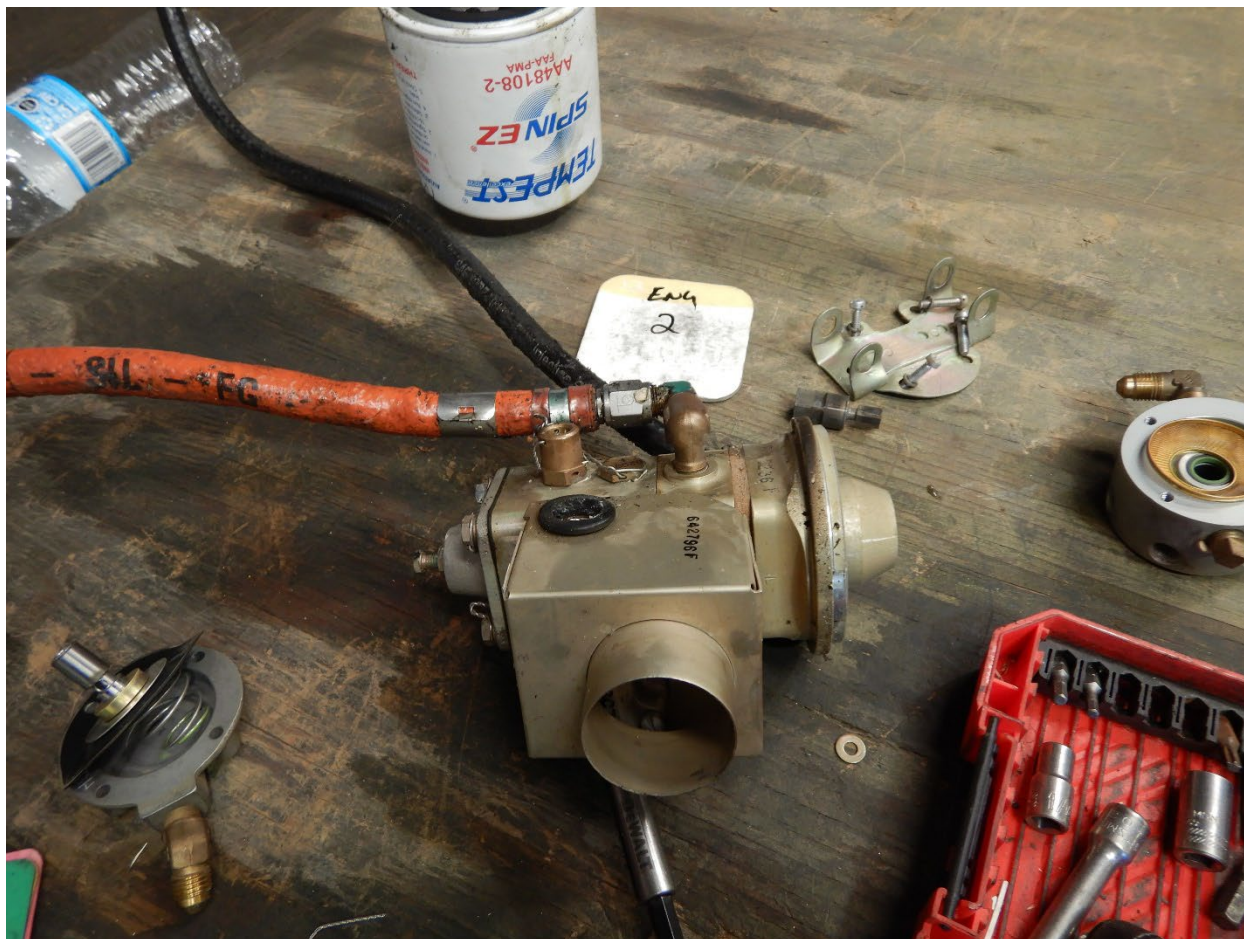


Figure 17. Number 2 engine fuel system components.

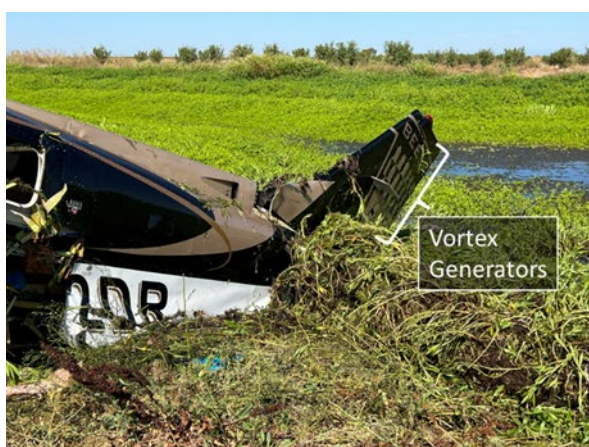


Figure 18. Vortex generators.