

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN23LA101

EXAMINATION SUMMARY

March 1, 2023

A.

1.0 Airframe Examination

1.1 Fuselage

- Fractured structural wooden stringers on top of fuselage at back of cabin
- Firewall displaced aft and left, consistent with nose first impact.
- Firewall crushed back to instrument panel

1.2 Empennage

- Bottom of empennage remained attached to tail structure
- Horizontal and vertical stabilizers free of impact damage
- Rudder and elevators free of impact damage
- Control continuity established from control stick to elevators through recovery disconnections. (No cuts or breaks present)
- Control continuity established from front and back rudder pedals to control surface continuously

1.3 Wings

- Left and right aileron control continuity was established from the cockpit through recovery cuts to the control surface.
- Left and right ailerons relatively free of impact damage
- Right wing
 - Outboard 5' displays leading edge damage consistent with impact.
 - Wing remained in one piece
 - Fuel tank deformed due to explosions during recovery efforts
 - Fuel cap present and secure
- Left Wing
 - Outboard 9' displays leading edge damage consistent with impact.
 - Wing remained in one piece
 - Fuel cap missing and was missing on scene - unrecovered

1.4 Landing Gear

- Relatively free of impact damage

1.5 Cockpit

- Instrument panel dislodged during impact
- Tachometer shows 631.05
- Hobbs shows 789.4

1.6 Survivability

- Front seatbelt failed at the Y-junction
- Front seatbelt remained attached to the top fuselage structure and was removed for further examination by NTSB AS-60
- Front seatbelt lap components were attached to the seat by looping the belt around the seat structure and was not bolted or otherwise secured to the seat or airframe structure. Also sent to NTSB AS-60
- Rear seat was unoccupied, so that restraint system was removed for further testing and examination by NTSB AS-60.
- Survivable space photo documented.
- Front seat relatively free of impact damage
- Rear seat removed to facilitate harvesting of lap belt portions
- Rear lap belt was attached to the seat frame with bolts
- Rear seat was relatively free of impact damage

1.7 Fuel/Fuel System

- Carburetor removed from engine
- Butterfly valve moves freely
- When opened, the bottom of the carburetor bowl was fractured, consistent with impact damage to the airbox
- Fuel screen was removed and found to contain fibrous material consistent with the material found on the fuel strainer screen
- Fuel strainer was removed and examined
 - Black colored foreign substance found in the bottom of the bowl, consistent with a sealant
 - Screen was removed and found to contain a fibrous debris.
 - Debris was not solid and likely could not restrict fuel flow as it was transparent in nature

1.8 Other Systems

2.0 Engine Examination

- Engine was impact damaged and prop flange bent
- Propeller was removed and engine rotated freely
- Suction was observed on all cylinders via thumb compression check
- Airbox was removed and found to be unremarkable
- Air intake valve wedged in an intermediate position with scoring found on both sides of the valve
- Top spark plugs 1, 2, and 3 have electrical tape wrapped around the wiring harness and lead
- When tape was removed, the lead wire was damaged with the conductor wire visible on the #3 top plug
- Top plugs removed and #2 was improperly torqued as it turned when the lead was being removed
- #4 top spark plug appears to have been cross threaded during installation as evidenced by visible thread damage
- #2 top plug damaged, consistent with being dropped or impacted
- Rocker covers removed with no visible damage to the valves
- Bottom spark plugs removed and photo documented
- Right magneto were spun utilizing a power drill with spark produced on all leads
- Left magneto was spun by hand and the impulse coupler was heard
- #3 bottom spark plug wiring harness damaged consistent with impact with conductor exposed
- Fuel pump and vacuum pump blockout plates were not factory supplied
- Oil pump suction screen was not present
- Debris of a non-metallic nature found inside oil screen

3.0 Propeller Examination

- Remained attached to the engine
- 1 blade bent aft with other blade relatively free of impact damage
- Both blades have very light chord-wise striations on the chamber side of the propeller
- No leading edge or trailing edge damage displayed

Submitted by:

Shaun Williams
Senior Aviation Accident Investigator