



EXAMINATION NOTES CEN20FA023

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The wreckage was examined on scene by this investigator-in-charge, and then transported to a secure facility and examined further with representatives from the airframe and engine manufacturers.

Airframe

- All flight control cables remained attached from the control surfaces to the cockpit controls. The aileron balance cable remained attached to both ailerons.
- The flap selector lever was impact damaged and the ratchet was broken.
 - The flap setting could not be determined.
- The fuel selector was removed and examined.
 - The fuel selector was found selecting the left tank.
 - Shop air was applied the valve and flow was confirmed from the left and right tank positions.
- The fuel strainer was removed and examined.
 - No fuel was found in the strainer.
 - The filter screen was free of debris.
- The electric fuel pumps were impact damaged. The filter screens were clear of debris and when power was applied to the pumps, both oscillated.
- The left wing exhibited aft crushing and accordion crumpling along the entire leading edge.
 - The left aileron was impact separated from the wing and found near the wreckage.
 - The left flap remained attached at its hinges.
 - The left landing gear remained attached to the wing.
 - The lift detector was examined.
 - The vane could not be moved due to crushing damage.
 - An ohmmeter was applied to the lift detector and electric continuity was confirmed
 - The fuel filler door was found closed. When examined, an orange microfiber towel was found wedged between the fuel filler door and compression fuel cap.

- The compression fuel cap could be removed without any adjustment to the rubber stopper. Attempts to secure the fuel cap were unsuccessful.
 - The left fuel cell was opened, and the fuel filler screen was clear of debris.
- The right wing exhibited aft crushing and accordion crumpling along the entire leading edge.
 - The right aileron remained attached to the wing.
 - The right flap remained attached at its hinges.
 - The right landing gear remained attached to the wing.
 - The fuel filler door was found closed. When examined, the fuel cap remained attached to the filler neck.
 - The fuel cap appeared in good condition.
 - The right fuel cell was opened, and the fuel filler screen was clear of debris.
- The airplane's empennage section was examined.
 - The stabilator trim jackscrew was extended about 5/8" above the drum.
 - This setting is consistent with a partial nose-up trim setting.

Engine

- The engine remained partially attached to the truss mount.
- Impact damage was noted to the crankcase with a majority of damage to the forward-starboard portion of the engine.
- The #1 cylinder head was impact damaged exposing the piston, however the head remained attached to the engine via the exhaust duct.
- Both the crankshaft and camshaft were exposed by impact damage.
- The engine was disassembled to the crankshaft.
 - The crankshaft was fractured at the #2 cylinder main journal and connecting journal.
 - Examination by the NTSB Materials Lab found the fracture surface to be consistent with overstress.
 - No additional anomalies were noted throughout the engine.

Propeller

- The metal, 3-bladed Hartzell propeller was examined.
- The propeller remained attached to the engine via the propeller flange.
- The propeller blades were labelled A, B, and C, for documentation purposes.
- Blade A displayed the most damage when compared to the other blades.
 - Blade A exhibited numerous deep chordwise scratches across the cambered side.
 - The blade was twisted towards the non-cambered side starting near the middle of the blade
- Blade B exhibited a few chordwise scratches on the outer half of the blade.
- Blade C was relatively undamaged but bent rearward between the middle of the blade and blade root.