



Memorandum For Record

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Examination of the structure revealed both wings remained attached, but the vertical stabilizer with attached rudder was separated. The rudder counterweight was separated (impact damage) but was recovered. The left elevator remained attached while the right elevator was fractured into multiple pieces. A section of right elevator remained attached to the middle hinge.

Primary flight control continuity for roll and pitch was confirmed from the cockpit to each control surface except where cut for recovery or impact damaged. Primary rudder flight control continuity was confirmed from the cockpit to the aft portion of the wing where both cables were cut for recovery. The individual who recovered the airplane reported seeing both rudder cables attached to the rear rudder bellcrank. The cables were under tension and were the only thing retaining the structurally separated vertical stabilizer and attached rudder.

The rudder pedal push tube that interconnected the left and right rudder pedals was broken (impact related). Examination of the control yoke revealed that the outer shaft was intact, and the yoke chains were still connected to the inner shaft. Both control yokes were melted/broken. It was also equipped with glass-mat tip tanks, both of which were consumed by the postcrash fire. The adjacent inboard sections of each wing did not exhibit extensive fire damage. The nose landing gear was extended but since it was separated from the airframe along with the engine the position was unreliable.

Examination of the cockpit revealed extensive heat damage to the flight and engine instruments. To obtain readings the glass of some were broken to obtain the readings below:

Fuel selector – Left (confirmed by blowing air)
Landing Gear Selector – appears down and to the side – lock on side damaged – Textron Photo (87) depicted the lock on left side was pushed down
Landing Gear motor - up
Magneto Switch - Key in RUN
Battery switch damaged – appeared ON

Alternator switch - ON
Flap switch – UP
Flap indicator - UP
Altimeter setting - 30.00
Altimeter – 77,620'
Heading - 320
Airspeed - 0
Cyl Temp – 0
Oil Temp – 0
Amps – 0
Oil press – 25
Left fuel sender – 3/4
Right fuel sender – 3/4
Fuel Flow – Damaged
Manifold pressure – Damaged
Tachometer – Damaged
VSI – 50 FPM down
Attitude indicator – rolled
Throttle Control – Full Forward
Mixture Control – Full Forward
Propeller Control – Full Forward
Auxiliary Fuel Pump Switch – ON it could be moved up and down
Auxiliary Fuel Pump – Exhibited Heat Damage.

Examination of the left wing revealed the outboard 5 ft of the wing was separated but recovered, and the speedbrake was retracted. The flap actuator was extended 2.1 inches, which equated to between 0° and 5°. The inboard 1.5 ft of the aileron remained attached, while the remainder of the aileron was separated but recovered. The push-pull rod between the aileron flight control surface and the bellcrank was fractured due to overload at the rod end near the aileron. The main fuel tank was intact internally, and both fuel senders were present. The fuel vent was free from the inlet opening into the fuel tank. Continuity of the fuel supply was confirmed from the tank to the fuel selector. The fuel senders were free to move and during resistance checks of the inboard sender at the upper (full) and lower (empty) positions the readings were 64.9 and 13.9 Ohms respectively. During resistance checks of the outboard sender at the upper (full) and lower (empty) positions the readings were 41.0 and 3.9 Ohms respectively. The left outboard sending unit was within limits at the full position.

Examination of the right wing revealed it sustained some heat damage. The speedbrake was retracted. The flap actuator was extended 2.1 inches, which equated to between 0° and 5°. The aileron and flap remained attached. The fuel vent was free from the inlet opening into the fuel tank. Continuity of the fuel supply was confirmed from the tank to the fuel selector. An unquantified amount of blue colored fuel was noted remaining in the fuel tank. The fuel senders were free to move and during resistance checks of the inboard sender at the upper (full) and lower (empty) positions the readings were 21.7 and 5.0 Ohms respectively. During resistance checks of the outboard sender at the upper (full) and lower (empty) positions the readings were 13.7 and 1.0 Ohms respectively.

Examination of the fuel supply from the fuel selector to the engine revealed the fuel selector was positioned to the left tank. The auxiliary fuel pump was heat damaged, and the fuel supply lines from the selector to the firewall exhibited multiple breaks, but all lines were free of obstructions. The screen of the airframe fuel strainer was clear, and no fuel was present. The inlet and outlet flexible hoses connected to the engine-driven fuel pump which were tightly installed were removed and there was no fuel in either. It was noted that the engine-driven fuel pump and surrounding area, and the oil filter exhibited heat damaged. The engine-driven fuel pump was removed and the drive coupling was intact and did not exhibit rounded corners. The engine-driven fuel pump was seized and could not be rotated by hand pressure.

Examination of the engine revealed an undetermined amount of oil drained from it. The turbocharger rotated freely by hand and the blades did not exhibit any damage. Impact damage was noted to the right front cylinder. The ignition leads on the right side of the engine exhibited impact damage. Crankshaft, camshaft, and valve train continuity was confirmed as well as to the accessory section of the engine. Thumb suction and compression was noted to all cylinders during hand rotation of the crankshaft except the right front cylinder which exhibited impact damage. Impact damage was noted to the Nos. 5 top and bottom, Nos. 3 top and bottom, and No. 2 top ignition leads. The impulse couplings from both magnetos were heard to operate during hand rotation of the crankshaft, and spark was noted at all of the undamaged spark plug leads. The damaged leads were cut near the cap and the crankshaft was rotated by hand and sparked at all cut leads near the cap.

A slight amount of fuel was drained from the flexible fuel hose from the metering valve to the flow divider. No contaminants were noted, and the fuel smelled of 100 low lead. The fuel metering valve which was impact separated from the engine was inspected. The mounts were fractured. The throttle and mixture control cables were painted red and cut consistent with recovery. Rotation of the throttle lever did not result in rotation of the throttle shaft and throttle plate. The internally locking hex nut that secured the throttle lever to the throttle shaft was tight and could not be moved by hand force. Hand movement of the throttle plate caused movement of the throttle shaft and corresponding movement of the interconnect linkage to the mixture control. The throttle body fuel inlet screen was clean.

Further examination of the engine revealed the left magneto was timed between 30° and 32° before top dead center (BTDC) while the right magneto was timed 18° BTDC (specification for both magnetos is 22° BTDC). Close inspection of the left magneto revealed it was tightly secured to the engine but the magneto flange near the upper securing nut was cracked and a linear gouge was noted on the cracked flange section consistent with slippage or rotation. Borescope inspection of all cylinders was performed with no evidence of damage to any valves or pistons. Examination of all bottom spark plugs revealed all but the Nos. 4 and 6 were oil soaked. All spark plugs were inspected, and all exhibited normal wear and color when compared with Champion Aviation Check-A-Plug chart. The fuel injectors were examined and the Nos. 5 and 6 were clear. The Nos. 2,3, and 4 were oil covered. After the oil was removed, they were free of obstructions. The No. 1 fuel injector nozzle was blocked by debris that appeared to be organic. The air induction and exhaust systems were inspected and while the exhaust system was impact damaged, there was no evidence of blockage of either the exhaust or induction systems. The air filter was inspected and while it was impact damaged and contained organic material, the

air filter was in-place and did not result in any blockage. Inspection of the oil filter element revealed no ferrous or non-ferrous materials. The manifold valve was removed but not disassembled.

Examination of the Hartzell PHC-C3YF-1RF three-bladed propeller, S/N EE-3850B was performed. The blades were marked A-C.

Blade A – Was tight in the propeller hub. It exhibited chordwise scratches on the non-cambered side of the blade about 16 inches from the blade tip. The scratches were about 1.5 inches aft of the leading edge. The blade was bent aft midspan about 20°. There were no gouges on the leading edge of the blade.

Blade B – Was loose in the propeller hub. The blade exhibited a smooth radius aft bend about 30°. Leading edge polishing was noted about 23 inches length from the blade tip. Trailing edge scoring was noted about 11 inches length from the blade tip.

Blade C – Was tight in the propeller hub. The blade was bent about 90° aft about 8 inches from the blade tip. Chordwise scratches were noted on the leading edge and cambered side of the blade.