

NTSB Airframe and Engine Examination Notes

The airplane was stationed in the Missouri River for about 24 hours before it was extracted from the water.

The airframe and engine examination occurred at the Mandan Municipal Airport (Y19), Mandan, North Dakota, on July 19, 2018. The participants in the examination were the National Transportation Safety Board investigator-in-charge, a Federal Aviation Administration aviation safety inspector from the Fargo Flight Standards District Office, and air safety investigators from Textron Aviation and Lycoming Engines.

Airframe (total time = 5104.21, at tach time 1023.5)

All structural components of the airframe were accounted for.

Both wing leading edges were pushed aft to the wing spar. The left-wing tip was pushed aft.

Both wing struts remained attached to the fuselage and wings.

With the exception of the windshield and engine cowlings, no major components had separated from the aircraft.

The engine was pushed aft towards the firewall.

No evidence of a fire occurring was observed.

The battery remained connected during and after the accident sequence.

All of the flight controls remained attached to the aircraft. Flight control continuity was established for the airframe.

A dent was observed in the inboard top of the right flap. This dent appeared to be caused by a screw head that would have only been in a position to cause the dent when the flaps were retracted. The flap indicator was at 10 degrees, the flap handle was at 20 degrees, and the flap actuator was at ~1.5" - 0°.

Both left tank supply lines were separated where they exited the left fuel tank. The left forward fuel tank pickup screen was clear of debris. Both fuel tanks exhibited hydraulic deformation, though the left fuel tank exhibited more deformation. Both fuel caps were found installed.

The fuel strainer screen and fuel strainer bowl were found clean. The fuel tank selector was in the on position and the fuel selector valve was in the on position. The left fuel tank gauge indicated 1/8 tank and the right-side fuel tank indicated 1/8 tank.

A mixture of fuel and water was found in the right fuel tank.

The landing gear was a fixed configuration.

The cabin heater was on, the cabin vent was off, the pitot heat was off.

The muffler and heater shroud were removed from the engine. No pre-impact abnormalities were noted to these components.

The ELT (Dorne & Margolin, DM ELT 6, 29613) was found installed correctly and was armed. The battery due date was 12/2019.

Both seats had a 3-point restraint system installed. Both seats were intact and installed correctly.

The handles on the left control yoke had separated. The instrument panel was pushed forward.

Airspeed: 75 knots

Attitude pitch: 10 degrees up

Attitude roll: 5 degrees left

Altimeter: 1250 feet

Altimeter setting: 30.14

Turn coordinator (airplane): Level Turn coordinator (ball): Right Heading indicator: 080 degrees Vertical speed indicator: 1500 down

Master battery: On Mater alternator: On Avionics 1: On

Lighting: All light switches off Ignition: Right position

Hour meter: 1432.1

Tach RPM: 0

Tach Hours: 1263.1

Oil pressure: 0

Oil temperature: 0

EGT: Digital (no reading) CHT: Digital (no reading)

Throttle: ½" out (cockpit position) Mixture: Full forward (cockpit position)

Carburetor heat: Off (both cockpit and engine positions)

The stall warning horn system was found damaged and not working.

The airplane was equipped with a digital carburetor temperature/outside air temperature indicator which was located on the far-right side of the instrument panel. The switch was in the "carb temp" position.

The carburetor temperature indicator system was found to be installed correctly from the cockpit to the carburetor. No anomalies were observed with the carburetor heat system.

Engine control cable continuity was confirmed. Both magnetos produced spark when rotated by hand after they were dried out.

No mechanical malfunctions or failures were observed with the airframe.

Engine (At tach time 1023.5 – engine total time 3946.5, TSMOH 1023.5, TSTOH 419.9)

All components of the engine and engine accessories were accounted for.

The engine was found attached to the engine mount system, which was attached to the airframe. No evidence of a fire occurring was observed. The engine case remained intact.

The crankshaft was able to rotate. Drivetrain continuity was established. Thumb compression for all cylinders was established.

The top row spark plugs (Champion REM37BY) were removed and examined. The spark plugs were a “worn- out normal” condition per the Champion Check-a-Plug chart.

A borescope inspection of the cylinders was conducted, and no abnormalities were observed.

The left magneto (Slick 4381 – 03020692) and right magneto (Slick 4381 – 03020692) produced spark at all leads.

The oil pickup screen was clear.

The Precision carburetor (MA-3PA 10-5267 – 75095212) had no observed anomalies. The fuel inlet screen was clear.

The Rapco vacuum pump 215CC – 172990) was disassembled and no anomalies were observed. The #1 exhaust and #2 intake tubes were bent. The exhaust system was bent aft.

No mechanical malfunctions or failures were observed with the engine and engine components.

Propeller (Sensenich 72CK56-0-54, K3907: Propeller times = overhaul 01-08-18)

All components of the propeller assembly were accounted for.

The two-blade metal propeller was found attached to the crankshaft. The propeller spinner did not exhibit evidence of rotation. One propeller blade was bent slightly aft, the other blade appeared undamaged.

No mechanical malfunctions or failures were observed with the propeller assembly.

Maintenance Records

An examination of the maintenance records provided by the airplane owner revealed no evidence of uncorrected mechanical discrepancies with the airplane.