



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

ACCIDENT DATE: July 23, 2021

AIRFRAME AND ENGINE EXAMINATION

WPR21LA292

This document contains 7 embedded photos.

A. ACCIDENT

Location: Mt. Hood, OR.
Date: July 23, 2021
Aircraft: Cessna 180 / N8884
NTSB IIC: Fabian Salazar

B. EXAMINATION PARTICIPANTS:

Name: Fabian Salazar
Duty Position: IIC
National Transportation Safety Board
Federal Way, WA 98003

Name: Josh Cawthra
Duty Position: Sr ASI
NTSB
Federal Way, WA.

C. SUMMARY

Examination of the airframe and engine was conducted at Auburn, Washington on October 7, 2021. There was no evidence of preimpact mechanical malfunction or failures with the airplane that would have precluded normal operation. The fuel hoses from the gascolator to the carburetor had been modified to include fuel flow meter transducer. After the modification, the two hoses had multiple bends. It could not be determined if the fuel hose bends causal to the loss of power.

Airframe Examination

Cockpit Documentation. The cockpit area received minor damage. The instrument panel was undamaged.

WRECKAGE AND IMPACT INFORMATION

AIRFRAME

The fuselage received substantial damage on the under-side near the engine cowling and on the right side, aft of the pilot's door. The area above the right-side pilot's door exhibited wrinkling at the wing root. The right-side horizontal stabilizer and right-side elevator were removed for recovery and exhibited an upward bend about mid-span. The right side of the vertical stabilizer and rudder were undamaged. The left-side of the empennage (horizontal stabilizer, elevator, vertical stabilizer, and rudder) were undamaged. The left side of the fuselage received minor damage. The left side of the engine cowling receive minor damage.

Right Wing. The right wing was removed for recovery. The tip inboard to about 36 inches, separated from the wing, including the aileron. The section from the break to the wing strut was displaced aft about 45°. The fuel cap to the right wing was secured and the seal was soft and pliable. The fuel "finger screen" was clear of debris.

Left Wing. The left wing was removed for recovery and exhibited minor damage to all components. The fuel cap was secure. The finger screen was clear of debris.

Main Landing Gear (MLG). The right-side main landing gear separated from the fuselage, at the upper attachment point. The right over-sized wheel assembly remained attached to the right main landing gear strut. The left-side main landing gear remained attached to the fuselage and exhibit minor damage. The left-side over-sized wheel assembly remained attached to the left main landing gear spindle. The tail wheel remained attached to the empennage and received minor damage.

Engine nacelle. The lower section of the engine cowling received substantial damage. The right-underside was crushed upwards. There were minor wrinkles in the sheet metal on the left side.

JP Instruments Engine Data Monitor (EDM, model JPI-830). The airplane was equipped with an EDM. The EDM was found in good condition, still mounted in the airplane. Data from the EDM was downloaded. The non-volatile memory contained 63 events or flights. Numbers 1 through 10 were not present. Numbers 11 through 73 remained. Event number 73 was the accident flight. Figure 1 shows the performance of the exhaust gas temperature (EGT) and cylinder head temperature (CHT) of the six individual cylinders. Figure 2 shows the performance of the engine RPM, fuel flow, manifold pressure, and oil temperature.

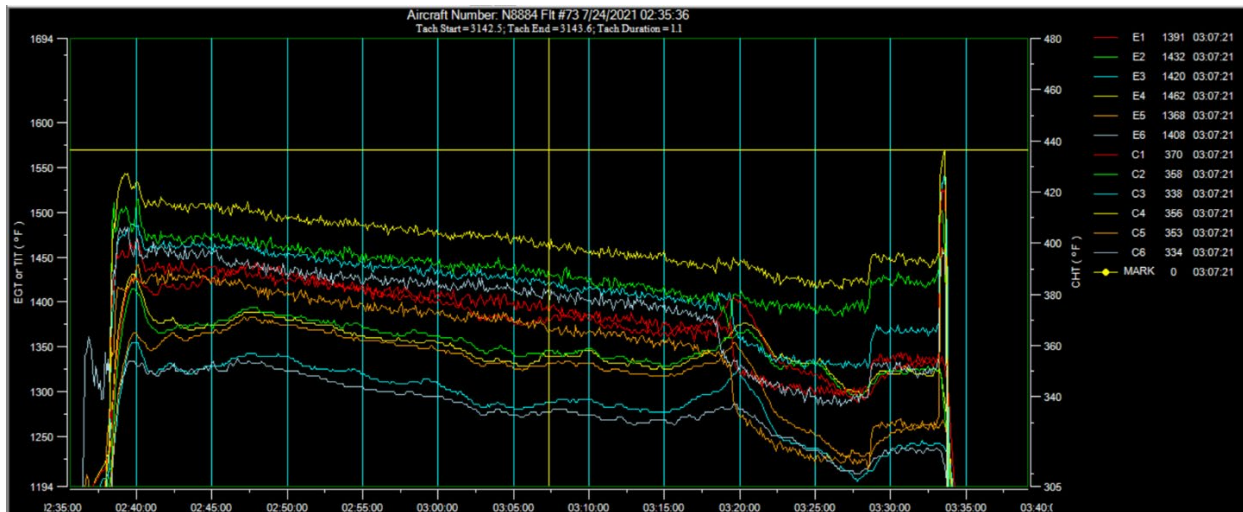


Figure 1. Graph showing the EGT and CHT for the engine.

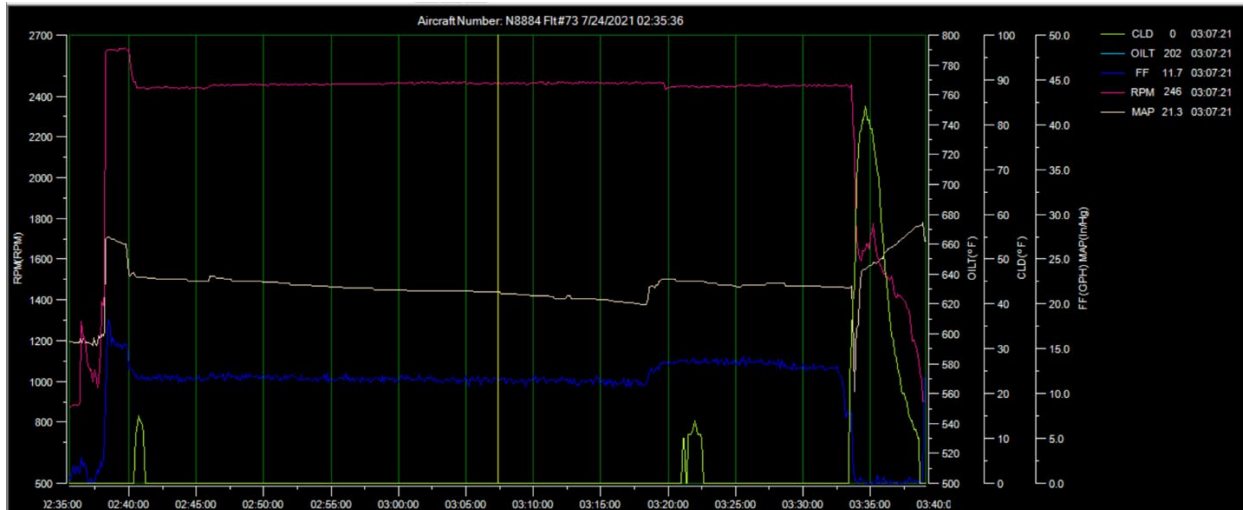


Figure 2. Graph showing the engine RPM, fuel flow, manifold pressure, and oil temp.

According to the data recovered from the EDM, the internal clock was set to coordinated universal time (UTC) and recorded a 1.06-hour flight on July 24, 2021, from 0235:35 until 0339:06. Data captured included exhaust gas temperature, cylinder head temperature, manifold pressure, engine RPM, and oil pressure. At 0235:36 all data rose in a manner that was consistent with the engine starting and producing power until about 0333:42 when all recorded data began to decrease sharply and continued to decrease until the end of the recorded data. At 0333:48, the fuel flow fluctuated from 0.6 to 0.0 for the remainder of the recorded data.

PROPELLER

The three bladed propeller exhibited damage to all three propeller blades with aft chord-wise bending about mid-span in two of the blades and minor chord-wise bending in the third. There were minor gouges and scratches on all three blades.

ENGINE

The engine remained secured to the fire wall by three of the four engine mounts. There was no damage to the engine or engine-mounted components. The fuel line from the gascolator remained secured to the gascolator to the fuel flow transducer and the second line from the fuel flow transducer to the carburetor remained secured. The fuel lines had two 90° bends and one 180° bend. There were no leaks detected. A blue colored fluid with the smell of aviation gasoline was present in the fuel lines. No water was detected in the fuel lines, gascolator or the carburetor bowl.

The engine was subsequently test run for ten minutes up to full power. The engine ran normally for the entire ten minutes with no anomalies observed or heard. After the engine run, the carburetor was removed and examined. There was no foreign debris found in the carburetor bowl.

PHOTO EXHIBIT



Figure 3. N8884 at the accident site.



Figure 4. N8884 at the recovery site.



Figure 5. Right-side view of the engine.



Figure 6. Left-side view of engine.

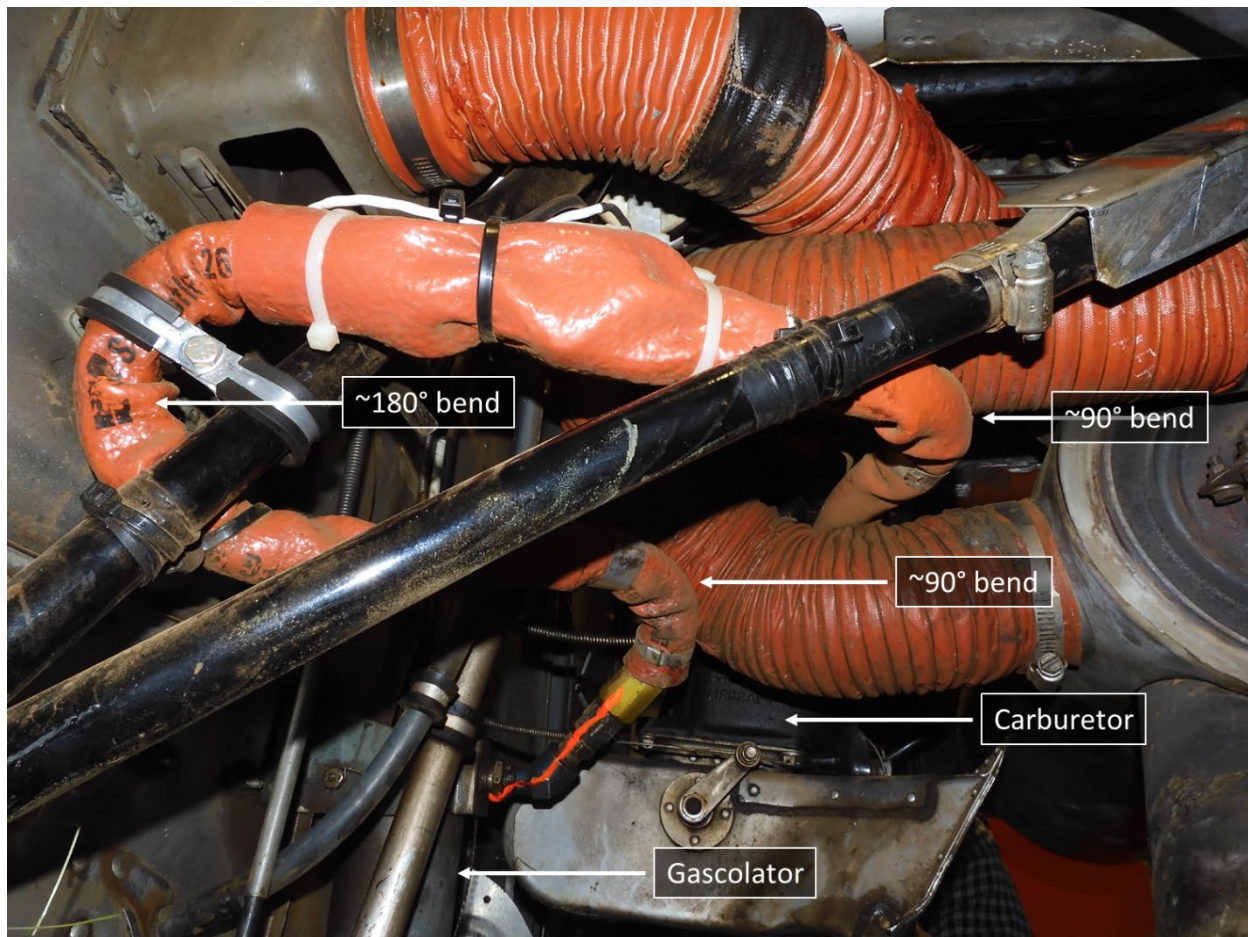


Figure 7. Fuel line from gascolator to the carburetor showing multiple bends.

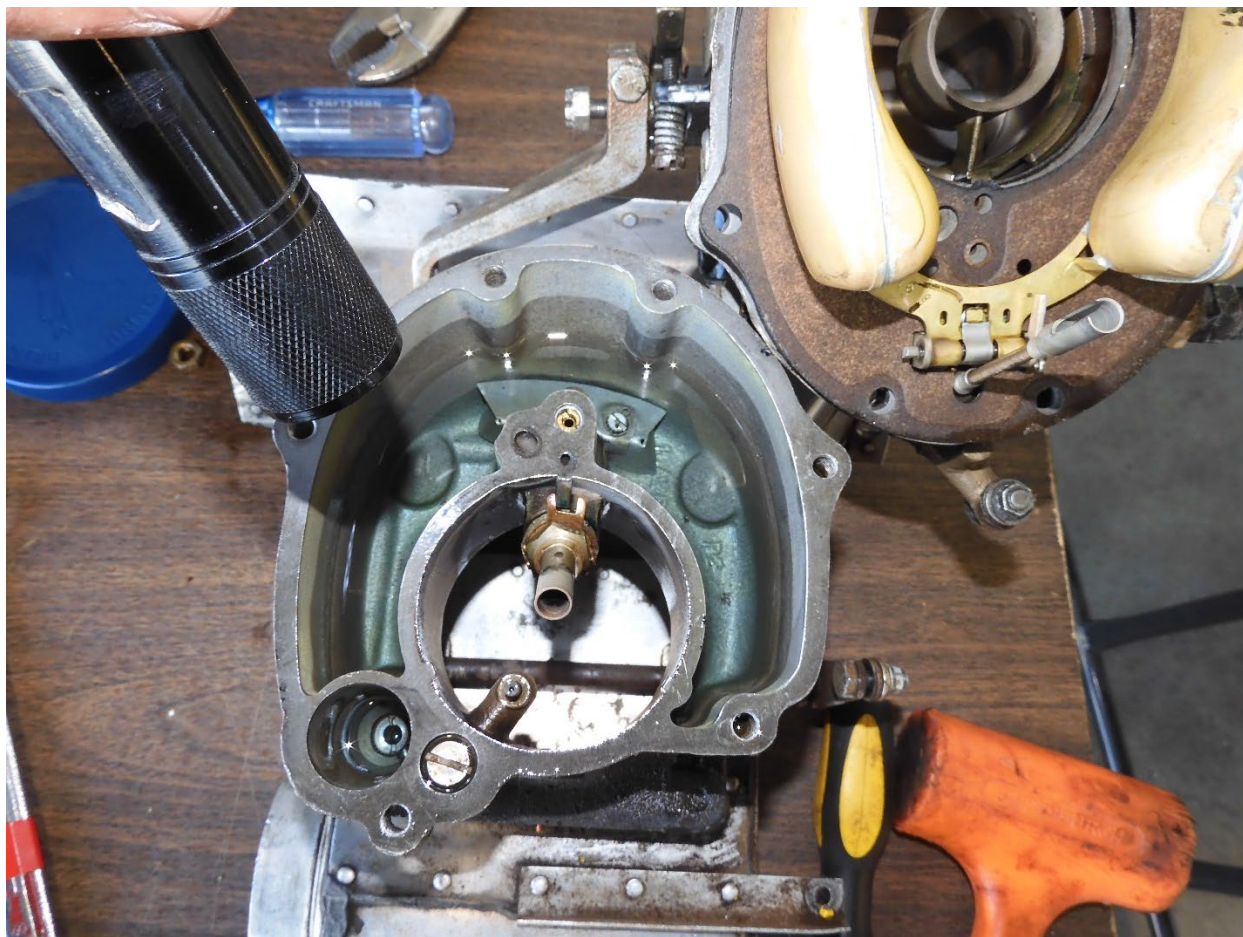


Figure 8. Carburetor bowl showing no debris.



Figure 9. Top end of the carburetor.