

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA25LA115

ENGINE /FUEL SYSTEM/LH AILERON BRACKET EXAMINATION

June 2, 2025

A. ACCIDENT

Location: Hampton, New Hampshire
Date: February 11, 2025
Time: 1110 EST
1610 UTC
Airplane: N77989

B. ENGINE /FUEL SYSTEM/LH AILERON BRACKET EXAMINATION

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On June 2, 2025, I traveled to Hampton Airfield (7B3), Hampton, New Hampshire, to conduct an examination of N77989's fuel system, engine, and a fractured left wing aileron bracket. The airplane was located inside the pilot/owner's hangar at 7B3. The pilot, who is also a FAA certificated A&P/IA mechanic, was present for and assisted with the exam. The pilot commented that prior to the accident, he always kept his airplane in the hangar, and it was never left outside.

Both wings had been removed from the airplane and were resting upright on saw horses. The main body of the airplane was sitting upright and being supported by blocks. The engine was secure to the firewall and the two bladed metal propeller had been removed. The tail section was partially detached from the empennage and remained connected via control cables. Both elevators had been removed.



Picture 1. Airplane and Wings in Pilot's Hangar.

Left Wing Aileron Bracket

The left wing sustained extensive leading edge impact damage; however, the aileron, which remained attached to the wing, did not appear to be damaged. The outboard aileron bracket was fractured into two sections. One section remained attached to the aileron cable, and the other half remained attached to the aileron. Both fractured sections were removed and sent to the NTSB Materials Lab for further examination.

Fuel System

The airplane was equipped with a main fuel tank (located behind both pilot seats), and a "ferry tank" located in the right wing. The ferry tank was not hooked up and was not being used at the time of the accident. The fuel port for the main fuel tank was located in the top of the fuselage between both wings. The cap was missing, and the port was covered with orange, fluorescent tape. The fuel tank was intact, and gravity fed the engine via a fuel line that ran down the left side of the fuselage to the fuel selector, then to a firewall fuel filter, then to the carburetor. The engine did not have an engine driven fuel pump. A fuel sample was taken from the firewall fuel filter. The fuel appeared light green in color and smelled like automotive fuel. A larger sample was then drawn from the filter and the color appeared less green and bluer.

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Another sample was taken and appeared light blue, consistent with 100LL aviation gasoline. All samples were absent of water and debris. The fuel filter was removed, and the screen was absent of debris. Shop air was blown into the fuel tank, and fuel/air was observed exiting the fuel filter, indicating the line was clear of debris. No leaks in the fuel system were observed.



Picture 2. Fuel drained from firewall fuel filter.

The rubber fuel hose between the fuel filter and carburetor was removed, and a trace of fuel was observed. Air was blown through the hose and no obstructions were noted. The carburetor sustained impact damage and remained partially attached to the engine. The carburetor was removed and disassembled. The fuel screen was absent of debris. The brass float was intact, and a small amount of fuel was in the bowl. The fuel, which smelled like automotive fuel, was light green in color and absent of debris and water. No evidence of corrosion was observed.

The pilot said that he never used automotive fuel in this airplane and only purchased 100 LL aviation gasoline from 7B3 via the self-serve fuel pump. He never used gas cans to fuel the airplane. The pilot said he purchased fuel a few days before the accident, and has never experienced a problem with the fuel purchased at 7B3. The pilot said he did a preflight inspection of the airplane before the accident flight, which included checking the fuel. He said the fuel appeared fine. The pilot said that he did not know why automotive fuel was found in the airplane.

No mechanical issues were identified with the carburetor or fuel system.

Engine



Picture 3. Front View of engine.

The Continental C85-12F (65 hp, 4-cylinder) engine was secure to the firewall and exhibited minor damage. The oil system was breached and little to no oil remained in the engine. Both magnetos were undamaged and secure to the engine.

The two-bladed propeller was partially re-installed to assist with the engine exam. One blade was relatively straight with a slight aft bend/twist at the tip. Some chordwise scratching was observed at the tip. The other blade was bent aft and slightly twisted.

The spark plugs and valve covers were removed from each cylinder to facilitate the engine exam. The No. 1, 3 and 4 top/bottom spark plugs appeared light gray in color consistent with normal operation per the Champion Check-A-Plug chart. The No. 2 top/bottom spark plugs were dark in appearance. When the engine was manually rotated, valve train continuity was observed on each cylinder. Only the left magneto impulse coupling was heard clicking when the engine was rotated, and spark was observed on four of the eight spark plugs. The right magneto was removed, and the impulse coupling was manually rotated, which produced spark to the remaining four plugs.

A compression test was conducted on each cylinder using a differential pressure tester. The results for each cylinder were:

No. 1 - 50 psi

No. 2 - 50 psi

No. 3 - 25 psi (the cylinder was re-tested after oil was added to cylinder, and the 2nd reading was 35 psi.)

No. 4 - 50 psi

According to the pilot, the minimum psi for each cylinder for normal operation was 64. The low compression was most likely due to the engine sitting for several months after the accident.

Examination of the engine revealed no evidence of any preimpact mechanical malfunctions or failures that would have precluded normal operation.

Submitted by:

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