

# National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN24LA102

## **N8805Z - AIRFRAME AND ENGINE EXAMINATION REPORT**

May 22, 2024

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## **A. ACCIDENT**

Location: Terrell, Texas  
Date: January 29, 2024  
Time: 2250 Central Time  
Airplane: N8805Z, Cessna 172H

## **B. N8805Z - AIRFRAME AND ENGINE EXAMINATION REPORT**

|                   |                                                                                                         |
|-------------------|---------------------------------------------------------------------------------------------------------|
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| Investigator      | Brad Miller, aviation accident investigator<br>National Transportation Safety Board<br>Aurora, Colorado |
| Party Coordinator | Jennifer Barclay, senior air safety investigator<br>Textron Aviation<br>Wichita, Kansas                 |

## **C. DETAILS OF THE EXAMINATION**

### **1.0 Onsite Examination**

The investigative team arrived at Air Salvage of Dallas (ASOD) in Lancaster, Texas, on May 21, 2024. The examination concluded on May 22, 2024. The investigative team was assisted by various staff members from ASOD.

### **2.0 Airframe Examination**

The airframe is a Cessna 172H airplane, serial number 17255455.

The airplane sustained substantial damage to the right wing and the bottom of the fuselage.

Flight control continuity was established for the airframe.

The two front and the two rear restraint systems and seats were found intact and were attached to the airframe.

Approximately two ounces of water was drained from the fuel strainer, however, the airplane was stored outdoors at ASOD for approximately four months with open fuel lines. The fuel strainer screen was clean, and the fuel strainer bowl had heavy corrosion present.

The fuel caps were observed closed and secured. Corrosion was observed around the filler neck assembly. Both fuel cap gaskets exhibited corrosion, were not pliable, and exhibited cracks along the edges of the gaskets.

The wing fuel tanks were the only fuel tanks installed in the airplane. Both wing fuel tanks (19.5 gallons each) were found intact. Both wing fuel tanks were removed from the wings and were filled entirely with water to check for leaks, and no leaks were observed.

Both fuel sending units were removed, were tested with a multimeter, and both fuel sending units were found to be out of the manufacturer's specifications.

Both wing fuel tank finger screens had no debris present.

The fuel vent system was clear of obstructions.

Compressed air was blown through the open fuel lines at the wing roots. No air was expelled at the fuel strainer inlet with the handle in the Both position. Additionally, the fuel selector handle was moved to the Left and Right position with compressed air being blown into the respective wing root line. No air was expelled at the fuel strainer inlet.

Compressed air was blown through the fuel strainer inlet line at the firewall. A small amount of air was expelled at each wing root with the fuel selector handle in the Both position. A strong amount of air was expelled from the left and right fuel lines at the wing roots with the fuel selector handle in the Off position. Air was expelled from the right wing root line with the fuel selector handle in the Left position. Air was expelled from the left wing root line with the fuel selector handle in the Right position.

The fuel selector handle was removed from the guide and positioning shaft and rotated 180 degrees. The previous testing was repeated by blowing compressed air through the fuel strainer inlet line at the firewall. A strong amount of air was expelled at each wing root with the fuel selector handle in the Both position. A small amount of air was expelled at each wing root with the fuel selector handle in the Off position. Air was expelled from the left wing root line with the fuel selector handle in the Left position. Air was expelled from the right wing root line with the fuel selector handle in the Right position.

With the fuel selector handle in the appropriate position on the guide and positioning shaft, air was blown through each wing root fuel line in its respective position of the fuel selector handle. The valve operated as designed. The detents in each position were weak.

The fuel selector valve and the handle were removed from the airframe and were shipped to the NTSB Materials Laboratory for examination.

There were no signs of fuel leaks on the airframe.

A fuel sample was not obtained from the airframe.

There was no recording devices observed in the airframe.

A clear plastic fuel measuring stick was found inside of the cockpit, and it was documented.

The mechanical anomalies noted with the airframe were the fuel selector valve (both the installation and airworthiness) and both fuel sending units being out of the manufacturer's specifications.

### **3.0 Engine Examination**

The engine is a Continental Motors O-300-D reciprocating engine, serial number 28216-D-3-D.

The engine was found separated from the airframe, due to the impact sequence. The engine case was intact.

The top and bottom spark plugs were all removed. All the spark plugs showed signatures per the Champion Aerospace Check-A-Plug Chart:

Top: 1 (worn-normal), 2 (worn-normal), 3 (worn-normal), 4 (worn-normal), 5 (normal), 6 (normal).

Bottom: 1 (normal), 2 (normal), 3 (normal), 4 (normal), 5 (normal), 6 (worn-normal).

Thumb compression was obtained on all six cylinders.

The rocker box covers were removed to observe the rocker arms, valve springs, and associated hardware. All items appeared to be present, installed, and moved when the propeller was rotated by hand.

The propeller was rotated by hand multiple times with no issues noted.

Both magnetos were found attached to the engine, were removed, and were tested by hand, and both magnetos produced spark at all leads.

The ignition harnesses for both magnetos sustained impact damage in multiple areas.

The air induction assembly and filter sustained impact damage, along with the carburetor.

The carburetor was disassembled with no anomalies noted.

The oil dipstick was removed, and oil was not showing on the dipstick.

The oil filter, that was full of oil, was removed, cut open, and the filter media was examined. No metallic debris was observed in the filter media.

The exhaust system was not obstructed.

A fuel sample was not obtained from the engine.

There were no mechanical anomalies noted with the engine.

#### **4.0 Propeller Examination**

The propeller is a McCauley Propeller Systems 1C172/EM7653 fixed-pitch aluminum propeller, serial number E13077.

The two-blade propeller was found attached to the crankshaft.

Both blades had chordwise scratching. Blade B appeared to be unremarkable while blade A was bent rearward, about midspan.

The spinner sustained impact damage.

There were no mechanical anomalies noted with the propeller.

#### **5.0 Maintenance Records Review**

The airframe, engine, and propeller maintenance records were reviewed and were documented.

The historical FAA airworthiness and registration records were retrieved and were reviewed.

Submitted by:

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Investigator-In-Charge