

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA25FA119

EXAMINATION REPORT

February 14, 2025

A. ACCIDENT

Location: Pierson, Florida
Date: February 14, 2025
Time: 1840 EST
2340 UTC
Airplane: 1985, Cessna 208, N40EA

B. EXAMINATION REPORT

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C. SUMMARY

On February 14, 2025, at 1840 eastern standard time, a Cessna 208, N40EA, was substantially damaged when it was involved in an accident near Pierson, Florida. The commercial pilot was fatally injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 positioning flight.

D. DETAILS OF THE EXAMINATION

1.0 Accident Site

The airplane impacted a densely wooded swamp at an elevation of about 50 to 60 ft. The wreckage was scattered along a fan-like pattern from the primary impact point and was oriented on a 279° magnetic heading with a debris field that was about 75 yards long. The initial impact point was the tops of 65-ft-tall trees with associated tree and limb fractures progressively lower to the terrain where the propeller and engine assembly impacted the ground creating a 30-inch-deep crater.

The main body of the wreckage consisting of the fuselage and cockpit was discovered wrapped around trees. Both wings and the empennage separated during impact, and the debris field contained severely fragmented parts consistent with a high energy impact. The accident site and debris field was covered in 2 ft deep water, mud, and densely populated palmetto trees.

The accident site had a strong odor of jet fuel and there was a fuel slick in the water. There was no evidence of a post impact fire observed at the accident site and no evidence of an inflight fire was observed on the airplane wreckage.



Figure 1 Accident site, wreckage, and layout.

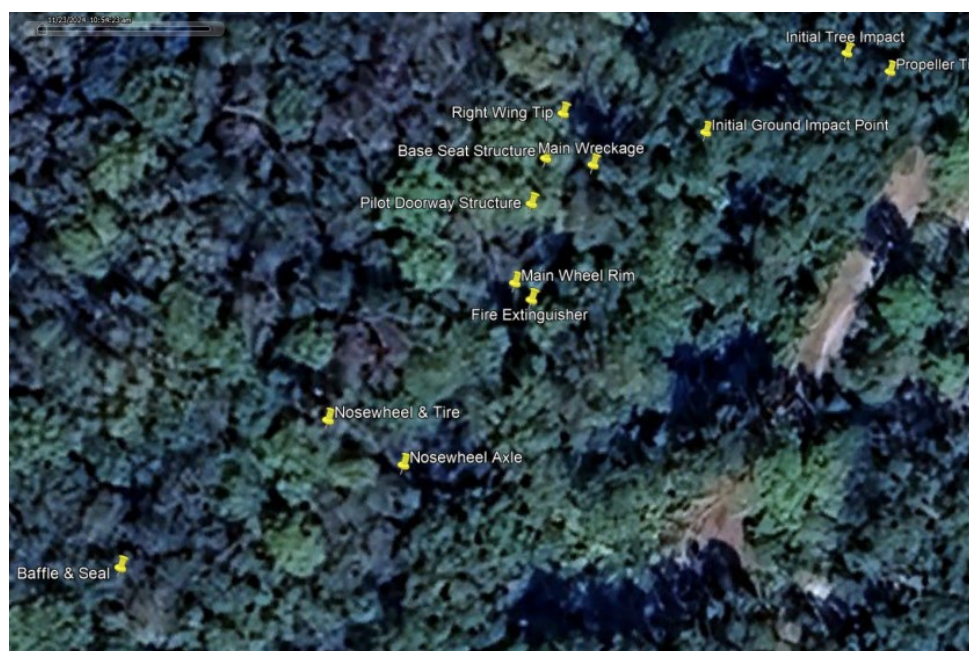


Figure 2 Accident site wreckage locations.

2.0 Airframe and Flight Controls

About 90% of the airplane was recovered and all flight control surfaces and major components were accounted for at the accident site. Both wings were impact-

separated and fragmented. All flight control surfaces were accounted for and impact damaged.

Flight control continuity could not be confirmed due to the severity of the wreckage fragmentation; however, all control cables what were observed exhibited features consistent with tensile overload with a "broom straw" appearance.

Clean cuts in the cables were performed by the first responders and the recovery personnel and were indicated with orange paint. No indications of a flight control anomaly was discovered during examination. Aileron trim actuator measurements on the right wing correlated to 13° trailing edge up deflection. The flaps were severely damaged; the flap actuator measured 5.6 inches, consistent with a near 0° flap setting (retracted) at the time of impact.

2.1 Empennage

The empennage separated at impact, about 24 inches forward of the horizontal stabilizers.

The inboard portions of the vertical stabilizer, and both horizontal stabilizers remained attached to the aft section of the empennage. The elevators and rudder separated at impact.

Measurement of the elevator trim actuators correlated to 10° trailing edge up on the left side and the right side was 15° trailing edge up (nose down trim).

2.2 Cockpit

The cockpit and instrument panel were destroyed. The throttle quadrant was impact damaged and discovered on the accident site separated from the cockpit. The emergency power lever was at the mid-travel setting; the power lever was about 55% and the propeller control was about 70% forward. The condition lever was full forward.

2.3 Survivability

Nonsurvivable. No occupiable space; High energy impact and severe fragmentation

2.4 Fuel/Fuel System

The fuel system was destroyed by impact forces, however, there was a strong odor of fuel at the accident site and there was a significant fuel slick in the water.

2.5 Other Systems

The nose gear strut, spring, and torque links separated at initial ground impact. The nosewheel and tire assembly, and axle continued for an additional 70 yards. The main gear struts, center carry through and wheels separated just prior to the final position of the main wreckage, with the right tire and part of the wheel continuing for several more yards.

3.0 Engine Examination

The Pratt & Whitney Canada, PTCA-114 engine exhibited severe impact damage, and the compressor section was bent 90° from the gearbox. Several engine components, such as the fuel control unit and fuel pump were missing or severely damaged. The first stage compressor rotor airfoils and air inlet struts were fractured.

The second stage compressor rotor airfoils were bent in the opposite direction of rotation with the compressor stator airfoils bent in the direction of rotation. The first stage planetary gear pins exhibited rubbing damage, and the first stage carrier was scored, and the splined adapter was fractured.

A follow up examination on the engine was conducted; it confirmed the initial findings on site. The engine displayed contact signatures to its internal components that were indicative of engine rotation at the time of impact. There were no preimpact anomalies discovered.



Figure 3 Three views of engine damage.

4.0 Propeller Examination

The propeller assembly was buried into the ground. The propeller assembly reduction gearbox was severely damaged and exhibited features consistent with impact and rotational damage. Two of the three propeller blades were discovered in the primary impact crater and both blades completely separated from the hub.

The blades were severely deformed with s-bending and exhibited chordwise scraping and gouges on the upper camber of the blades. Both propeller blades were fractured and missing about 10 inches of the tips. An extensive search for the missing blade was conducted but it was not located. Trees leading up to the main accident site exhibited chopping and slicing features consistent with propeller strikes as the airplane travelled through the trees.



Figure 4 Propeller damage.

5.0 Maintenance and Aircraft Information

Airframe, Engine and Propeller:

The 100-Hour inspection was conducted on December 31, 2024. @ AFTT of 17,771 hours. The ETT was 8,820 hours and 2,934 hours since major overhaul. No irregularities or discrepancies were documented on any of the three systems.

6.0 Meteorological Information

Location.....: KDED Day of month.....: 14 Time.....: 23:55 UTC Report is fully automated, with no human intervention or oversight Wind.....: true direction = 010 degrees; speed = 6 knots Visibility.....: 10 Statute Miles Cloud coverage.....: scattered (3 to 4 oktas) at 3300 feet above aerodrome level Cloud coverage.....: overcast (8 oktas) at 4500 feet above aerodrome level Temperature.....: 20 degrees Celsius Dewpoint.....: 16 degrees Celsius QNH.....: 30.34 inHg

A formal weather study was requested and will be located in the public docket.

Submitted by:

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