

National Transportation Safety Board

Office of Aviation Safety
Central Region



CEN22FA081

WRECKAGE EXAMINATION SUMMARY

ACCIDENT

Location: Fulshear, Texas
Date: December 21, 2021
Time: 0926 central standard time (1526 UTC)
Airplane: Cessna 208B, Registration No. N1116N

PARTICIPANTS

Investigator-In-Charge	Andrew Todd Fox National Transportation Safety Board Denver, Colorado
Group Member	Rick Bolton Federal Aviation Administration - Houston FSDO Houston, Texas
Group Member	Casey J. Love Textron Aviation Wichita, Kansas
Group Member	William D. Sanders Martinaire Aviation Addison, Texas

ACCIDENT SYNOPSIS

On December 21, 2021, about 0926 central standard time, a Cessna 208B airplane, N1116N, collided with a powered paraglider while inflight near Fulshear, Texas. The pilot of the Cessna and the powered paraglider operator were fatally injured. The Cessna was destroyed and the powered paraglider sustained substantial damage. The Cessna was operated as a Title 14 *Code of Federal Regulations* (CFR) Part 135 cargo flight, and the powered paraglider was operated as a Title 14 CFR Part 103 personal flight.

WRECKAGE EXAMINATION TIMELINE

The National Transportation Safety Board (NTSB) Investigator-in-Charge (IIC) traveled onsite and examined the wreckage December 22, 2021, with the assistance of a Federal Aviation Administration (FAA) Airworthiness Inspector, a Textron Aviation Investigator, and a representative of Martinaire Aviation.

CESSNA 208B DESCRIPTION

The airplane was a 1994 Cessna model 208B, serial number (s/n) 208B0417, registration number N1116N. The cargo airplane was a strut-braced high-wing airplane with tricycle landing gear. The airplane's empty and maximum takeoff weights were 4,787.5 lbs and 8,750 lbs, respectively. The airplane was issued a standard airworthiness certificate on January 20, 1995.

The airplane was powered by one Pratt & Whitney model PT6A-114A, s/n PCE-PC1225, 675 shaft horsepower engine. The gas generator featured a three-stage axial, single-stage centrifugal compressor, a reverse annular-type combustion chamber, and a single stage compressor turbine. A single-stage power turbine drives a reduction gear assembly and power output drive flange. The airplane was equipped with a three blade, constant speed, McCauley model 3GFR34C703-B propeller, s/n 090228.

CESSNA 208B MAINTENANCE SUMMARY

The airplane was maintained under the provisions of a FAA-approved manufacturer inspection program. The last phase inspection was completed on October 19, 2021, at 13,059.3 hours total airframe time. A postaccident review of the maintenance records found no history of unresolved airworthiness issues. Based on available documentation, the airframe total time and engine total time before the accident flight were 13,125 hours and 5,676.1 hours, respectively.

The airplane was equipped with a transponder and an ADS-B OUT transmitter, which made it visible to the air traffic control system. According to the operator, the airplane was not equipped with ADS-B IN technology, cockpit display of traffic information, or a traffic alerting system.

POWERED PARAGLIDER DESCRIPTION

The unregistered powered paraglider was a Dudek Paragliders model Solo 21, serial number (s/n) P-231031. The powered paraglider's minimum and maximum operating weights were 132 lbs and 220 lbs, respectively.

The powered paraglider was equipped with one Nirvana Paramotors model Rodeo 125 Blue Line, s/n 2621062, 28 shaft horsepower engine, which provided thrust through a three blade, fixed pitch, Trilistá Karbonová Skládací model Rainbow propeller.

The powered paraglider was not equipped with a transponder or an ADS-B OUT transmitter. Based on available information, the powered paraglider was not

equipped with ADS-B IN technology, cockpit display of traffic information, or a traffic alerting system.

POWERED PARAGLIDER MAINTENANCE SUMMARY

The powered paraglider received a manufacturer's conformity inspection on October 28, 2021. No additional maintenance documentation was reviewed during the investigation.

WRECKAGE EXAMINATION (DECEMBER 22, 2021)

Cessna 208B (N1116N)

An onsite examination determined that the main wreckage for the Cessna 208B Caravan was found on the property owned by Brazos River Sportsman Club (3525 Bowser Road, Fulshear, Texas, 77441) at 29.650019°N, -95.950949°W. There was no evidence of a postimpact fire at the accident site.

The Cessna airplane impacted terrain at high vertical speed in a steep nose down and inverted attitude, as shown in figure 1. The airplane impacted terrain on a 332° magnetic heading. Most of the fuselage structure was highly fragmented during impact. The larger identifiable fragments exhibited extensive compression damage due to impact with terrain.



Figure 1. Cessna 208B main wreckage (Fort Bend County Medical Examiner Office photo)

The cockpit section of the aircraft, including the seats and instrument panel, were embedded about 6-8 ft below the soil surface and were highly fragmented. The cockpit section of the aircraft was not examined due to soil embedment. The airplane's recording hour meter was destroyed during impact.

The empennage was highly compressed along the longitudinal axis. The vertical and horizontal stabilizers remained attached to the aft tail cone bulkhead and were bent aft. The attached inboard sections of the stabilizers exhibited severe compression damage. The outboard 4 ft of each stabilizer separated from their respective inboard section. The separated section of the left horizontal stabilizer was identified at the accident site. The left elevator remained attached to the separated section of the horizontal stabilizer and was folded in half about midspan. The trimtab remained attached to the left elevator. The inboard section of the right elevator remained attached to the stabilizer and was present in photos before the accident site was excavated by first responders and the medical examiner. The outboard section of the right horizontal stabilizer and elevator were not observed during the on-scene investigation; however, a 4 ft long piece of the right horizontal stabilizer and spar were subsequently located by the property owner. The lower section of the vertical stabilizer was observed with the lower 2 ft of the rudder was still attached. The upper section of the rudder was fragmented.

Both wings were impact separated from the fuselage at the wing attach points. Forward and aft wing attach fittings were found fragmented. The wing carry-through section, with the flap drive motor still attached, was observed at the main wreckage site. Both wing lift struts were observed at the accident site.

The left wing was highly fragmented at the wreckage site along with portions of the left aileron. Upper and lower wing skin and rib fragments exhibiting severe compression damage were observed scattered about a 100-foot radius of the main wreckage. The left aileron push/pull rod was observed protruding from the soil near the impact site.

The inboard section of the right wing from the root to the lift strut attach point was observed at the main wreckage site and was highly compressed and fragmented.

The outboard 10 ft of the right wing, outboard of the lift strut attach point at right wing station (RWS) 170, separated following the impact with the powered paraglider, as shown in figure 2. The separated section of the right wing was located 0.6 mile east (95°) of the main wreckage site. The outboard half of the flap separated with the wing and was found 0.25 nm south of the separated wing section. The right aileron and spoiler remained attached to the separated section of the right wing.

There was a semicircular impact impression in the leading edge of the right wing outboard section. The center of the impression began at RWS 170 and extended outward to RWS 200. Fabric material, resembling the material observed in FAA photographs of the powered paraglider operator's jacket, were embedded in the right wing structure common to the impression area. Additionally, there was biological matter observed in the vicinity of the fabric material inside the wing structure. The inboard portion of the impact impression was distorted aft during ground impact. The impression depth extended chordwise aft from the wing leading edge aft about 36 inches to the aft wing spar.



Figure 2. Outboard section of Cessna 208B right wing

Aircraft flight control continuity could not be established due to severe airframe fragmentation and soil embedment. The aileron sector located in the wing carry through section was observed with the control cables still connected. Movement of the right aileron, which remained connected to the separated right wing section, was observed when the control cables were actuated by hand. The rudder and elevator control cables remained attached to their respective bellcranks. Multiple sections of control cable ranging in length were observed at the accident site. All observed control cable separations were consistent with tensile overload.

The Cessna's engine and propeller were embedded about 10 ft below the soil surface. The engine was extracted from the impact crater and is shown in figure 3. All three propeller blades were found separated from the hub, as shown in figure 4. Blade 1 was bent aft midspan and exhibited leading edge gouges and chordwise scoring. Blade 2 exhibited S-shaped bending, leading edge gouging, and chordwise scoring. Blade 2 was fractured in two pieces about 18" outboard of the hub. Blade 3 was fractured into multiple pieces, which included the inboard 2 ft of the blade and a 6-inch-long section of blade. The recovered fragments exhibited chordwise scoring and S-shaped bending.



Figure 3. Engine after it was extracted from impact crater



Figure 4. Propeller Blades

Powered Paraglider

The individual flying the powered paraglider and the paraglider engine were found about 0.7 mile east-northeast (74°) of the Cessna main wreckage. The individual flying the powered paraglider and the paraglider engine were located about 200 ft apart. The individual flying the powered paraglider separated from the seat style harness. The paraglider's propeller shroud was found in multiple pieces near the Cessna's separated right wing, about 0.6 miles east (95°) of the main wreckage site. The propeller shroud pieces were recovered and placed on the Cessna's right wing section by the property owner before the investigators arrived onsite.

The paraglider wing, harness, and emergency parachute were located about 3.9 miles south (170° true) from the Cessna main wreckage, as shown in figures 5-7. The static and control lines remained intact and attached to the harness and wing. The harness exhibited tearing and impact damage. The wing remained intact with only slight tearing present on the bottom surface, as shown in figure 8 and figure 9. The emergency parachute was found deployed, intact, with no tearing or damage. The recovered components of the powered paraglider are shown in figure 10.



Figure 5. Paraglider harness and emergency parachute (FAA photo)



Figure 6. Paraglider wing (FAA photo)

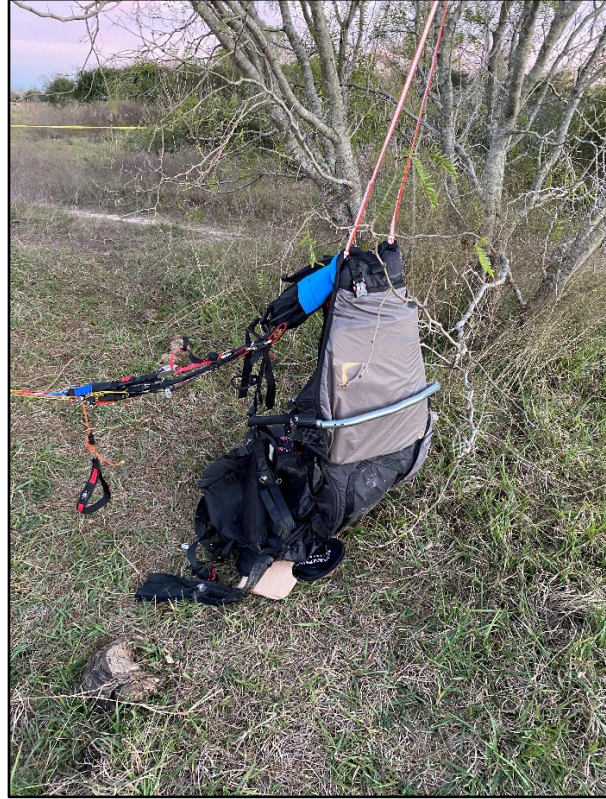


Figure 7. Paraglider harness (FAA photo)



Figure 8. Wing top (FAA photo)



Figure 9. Wing bottom (FAA photo)



Figure 10. Powered paraglider layout after recovery (Textron Aviation photo)

Personal Electronic Devices

A GoPro Hero 10 Black video camera and an Insta360 One X2 video camera were located near the powered paraglider operator's body. These devices exhibited impact related damage, but their respective microSD cards were found installed in each device. These two video cameras examined by the NTSB Vehicle Recorder Laboratory in Washington, DC.