

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR23LA086

WRECKAGE EXAMINATION

Factual Report

January 18, 2023

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A. ACCIDENT

Location: Kent, Washington
Date: 10/02/2022
Time: 2000 PDT
0300 UTC
Airplane: Cessna 182C

B. WRECKAGE EXAMINATION PARTICIPANTS

NTSB-IIC	Andrew Swick NTSB, AS-WPR Phoenix, Arizona
Investigator	Kristyn Blocher NTSB, AS-WPR Seattle, Washington
Investigator	Paul Basti NTSB, AS-NTSB Seattle, Washington
Inspector	Eric Correa FAA, FSDO Seattle, Washington

C. SUMMARY

The examination of the wreckage revealed impact damage to the forward cabin structure and both wings. The forward control stick aileron cables separated at the left aileron turnbuckle and right aileron cable near the forward pulley. The remaining flight control system was intact and no anomalies noted. The aft support structure and engine were crushed forward. The idler pulley control cable was found loose from the pulley assembly. The elevator bellcrank located near the empennage was contacting the rudder cable sleeve that is secured to the adjacent tail structure.

D. DETAILS OF THE EXAMINATION

1.0 Airplane Wreckage Prior to the Examination

The airplane wreckage was located on the top of a storage facility. According to photos supplied by the FAA, the forward cabin structure and the left wing had impact damage. Onsite photos prior to the onsite wreckage exam show the flaperons were near the 20° down position (See Figures 1-2). The empennage was separated during the relocation of the wreckage.



Figure 1-Left wing view from the aft side.
(Photo courtesy of the FAA)



Figure 2-Empennage and right wing view from the aft side. (Photo courtesy of the FAA)

2.0 Wreckage Examination

The airplane wreckage was positioned in a hangar. The empennage was displayed on the floor and the main wreckage was located on a flatbed trailer.



Figure 3-Empennage.



Figure 4-Main wreckage.

2.1 Empennage

The left stabilizer forward side strut separated from the stabilizer. The vertical and horizontal stabilizers, rudder and elevators were undamaged and flight control continuity was established from the cut rudder cables and elevator control tube. While checking the elevator control continuity, the elevator bellcrank lower control rod nut and cotter pin were making contact the left rudder cable sleeve during the bellcrank movement. The nut contacted the sleeve at the elevator full down position and slid along the top of the cable sleeve about 1-inch in length before the sleeve would drop suddenly to the outboard side. Scraped paint from the cable sleeve was visible. The cable sleeve was attached to the structural tubing with clamps in several locations along the structural tubing. The clamps were intact and there were no signatures of sleeve movement from the attached locations. The left side of the elevator bellcrank and hardware were free of contact with the sleeved cable. A video of this bellcrank movement is in the public docket.

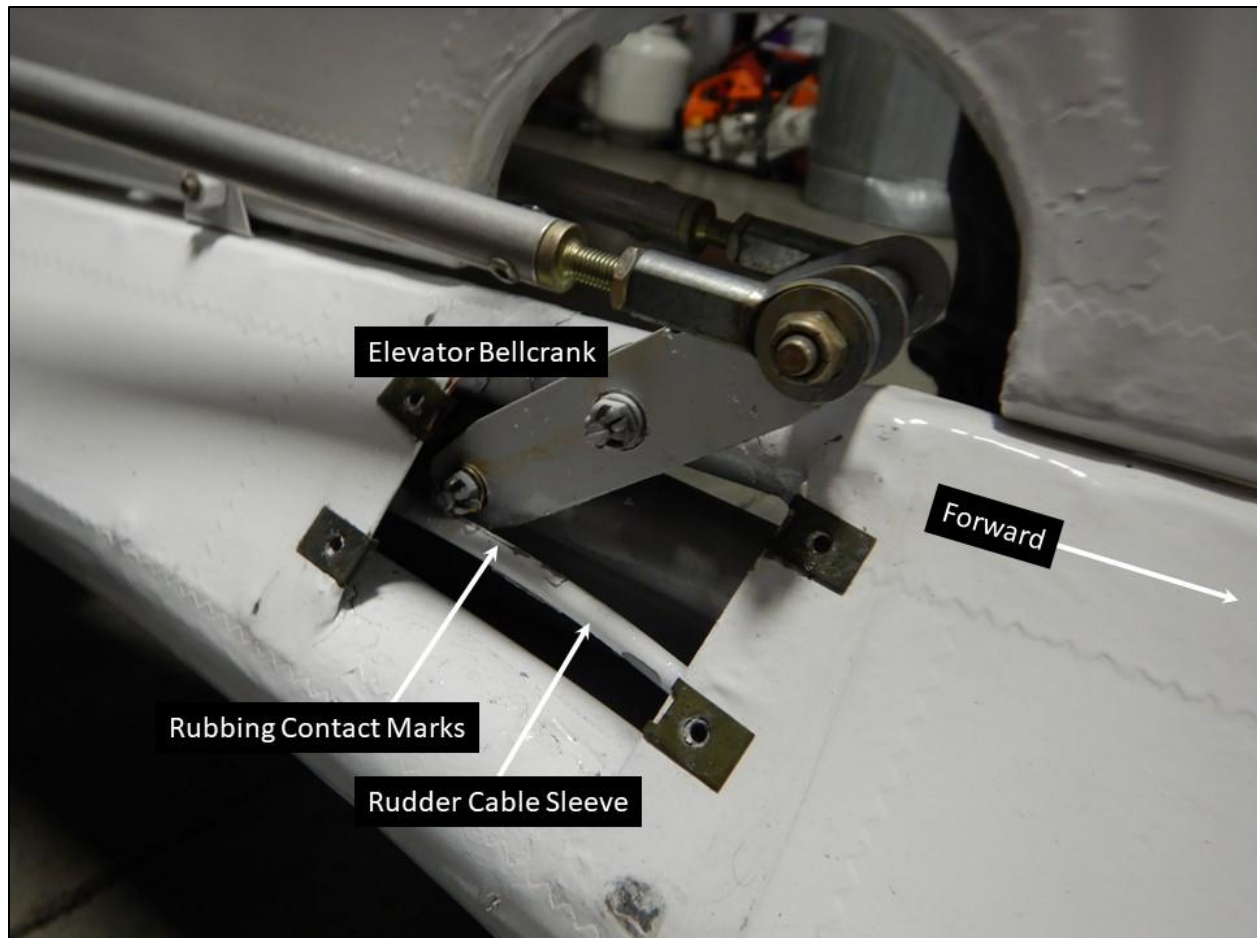


Figure 5-Elevator bellcrank in the elevator full down position.

The rudder ground adjustable trim tab was undamaged and positioned about 20-degrees to the left.



Figure 6-Empennage, ground adjustable rudder trim tab.



Figure 7-Right side elevator and rudder control attachments.



Figure 8-Left side elevator and rudder control attachments.

2.2 Wing and Fuselage

The wings remained attached to the root tube on the fuselage during the examination. The left wing had impact damage near the inboard side of the aileron. The left aileron torque tube was cut during the examination to attain full aileron and flaperon travel. The right wing tip area was crushed upwards. The fuselage had impact damage throughout with extensive impact damage to the forward side.

2.3 Flaperon System

The flaperon control handle was adjusted from the cabin area and control continuity was established to the flaperon slide bracket assembly. Near the jackscrew for the handle adjustment, an electrical wire was found wrapped across the jackscrew assembly. See Figure 10.

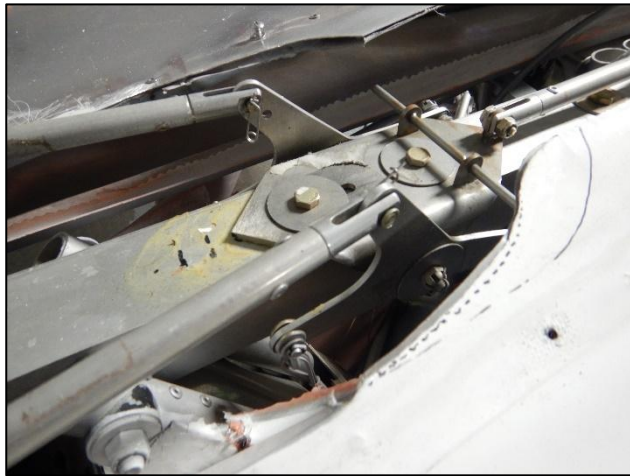


Figure 9-Flaperon slide bracket assembly, aileron bellcranks and aileron control rods.

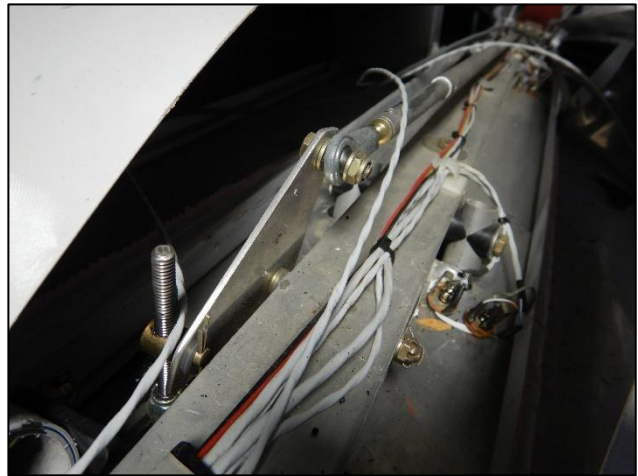


Figure 10-Flaperon crank assembly, bellcrank and control rod (looking from the top to aft).



Figure 11-Aileron control tubes.

2.4 Aileron System

The aileron bellcranks remained attached to the flaperon slide bracket. The attaching hardware for the aileron cables and aileron control rods was secured to both aileron bellcranks. The left outboard aileron cable [forward seat position], connecting to the aileron bellcrank, was loose and twisted around the left inboard cable. The cable was pinched between the left rear vertical tubular structure and a portion of firewall material. See Figure 12. The cable was freed, and the cable alignment from the bellcrank to the pulley assembly was normal.

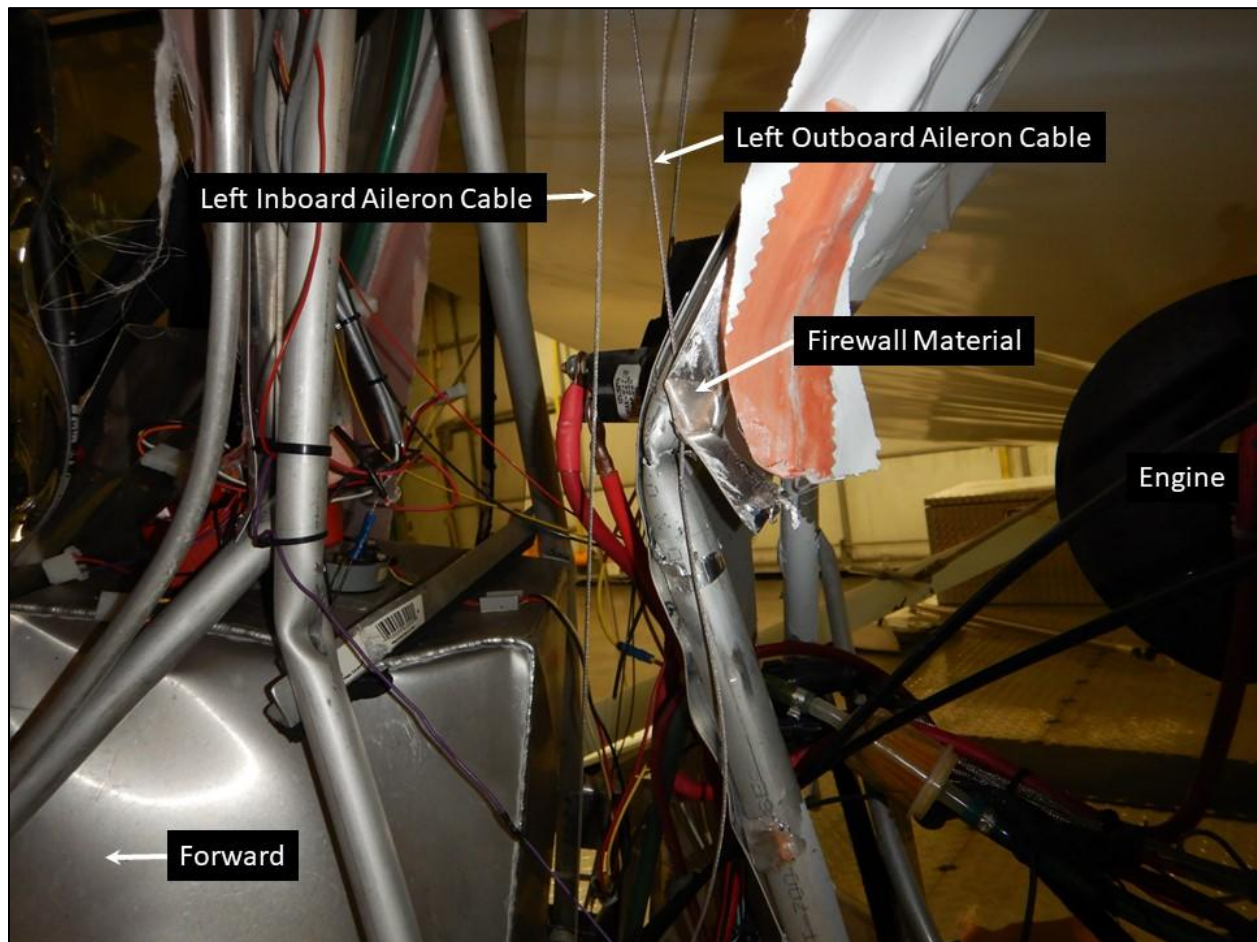


Figure 12-Left aileron cables and aft airframe structure.

The aileron cables continued through the pulleys located on the cabin structure. The pulley assemblies were undamaged and showed no signatures of cables slipping between the pulley and its bracket. The aileron cables remained attached to the rear control stick. The left aileron cable turnbuckle at the forward control stick position had impact damage. The turnbuckle barrel section was broken in two and both eye ends were bent. An unraveled safety wire kept the parts from separating. The right aileron cable separated near the forward pulley assembly and the cable ends had broomstraw signatures. Both aileron cables remained attached to the forward control stick. The forward control stick separated from the lower linkage.

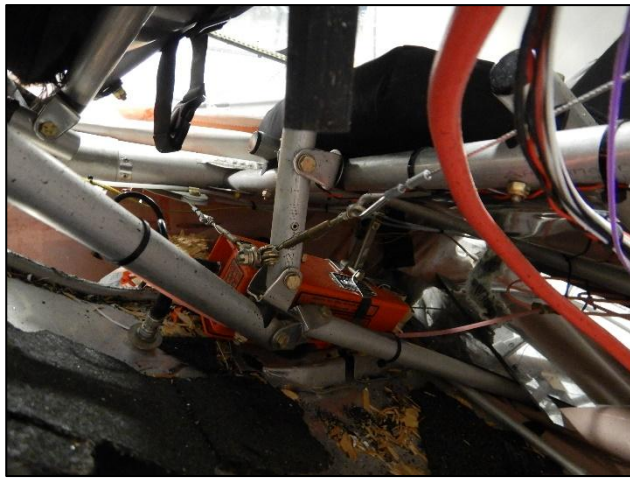


Figure 13-Aft control stick and aileron cable attachments.



Figure 14-Forward control stick and aileron cable attachments.



Figure 15-Left aileron cable at the forward stick position.

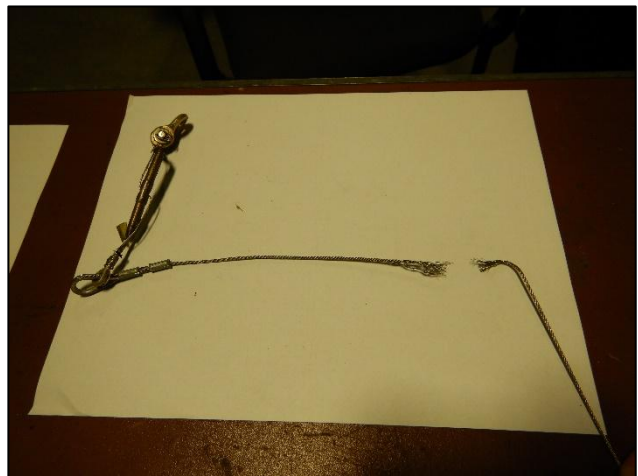


Figure 16-Right aileron cable at the forward stick position

The idler pulley was undamaged and showed no signatures of the cable slipping between the pulley and its bracket. The idler cable was intact and was loose around the pulley. The tubular structure supporting the idler pulley assembly was positioned forward of its original position.



Figure 17-Aileron idler pulley and cable.



Figure 18-Engine and aft fuselage structure.

The left aileron cables located near the rear pulley assembly was rubbing on the fuel tube from the fuel tank. No damage was noted to the fuel tube.

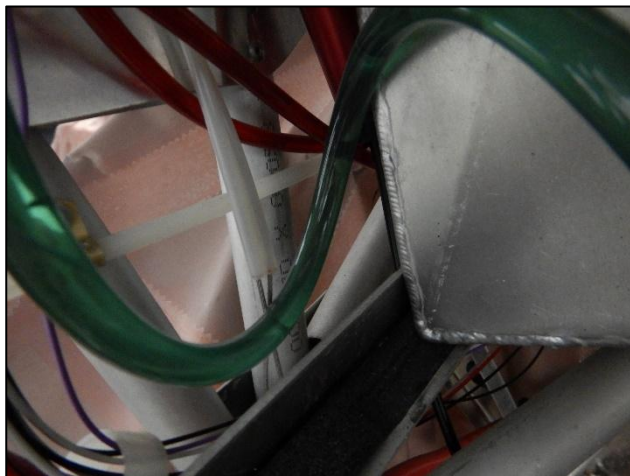


Figure 19-Fuel line and left aileron cables.

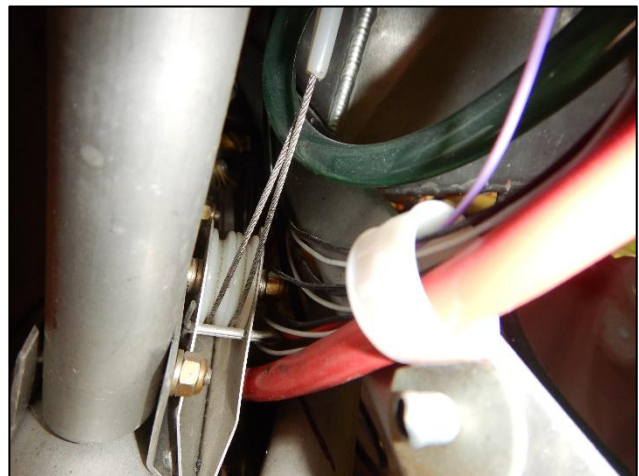


Figure 20-Fuel line and left aileron cables.

2.5 Fuselage

The forward fuselage including the forward rudder pedals, forward control stick, nose landing gear, nose cone and structural tubing had extensive impact damage. See figure 21. Structural tubing surrounding the fuel tank had impact damage. The fuel tank remained intact and had crushing near the top side from adjacent structure. The rear support structure was crushed forward, consistent with forward impact from the engine.

The seat restraints remained secured to the airframe structure. The forward seat restraints were cut by first responders.

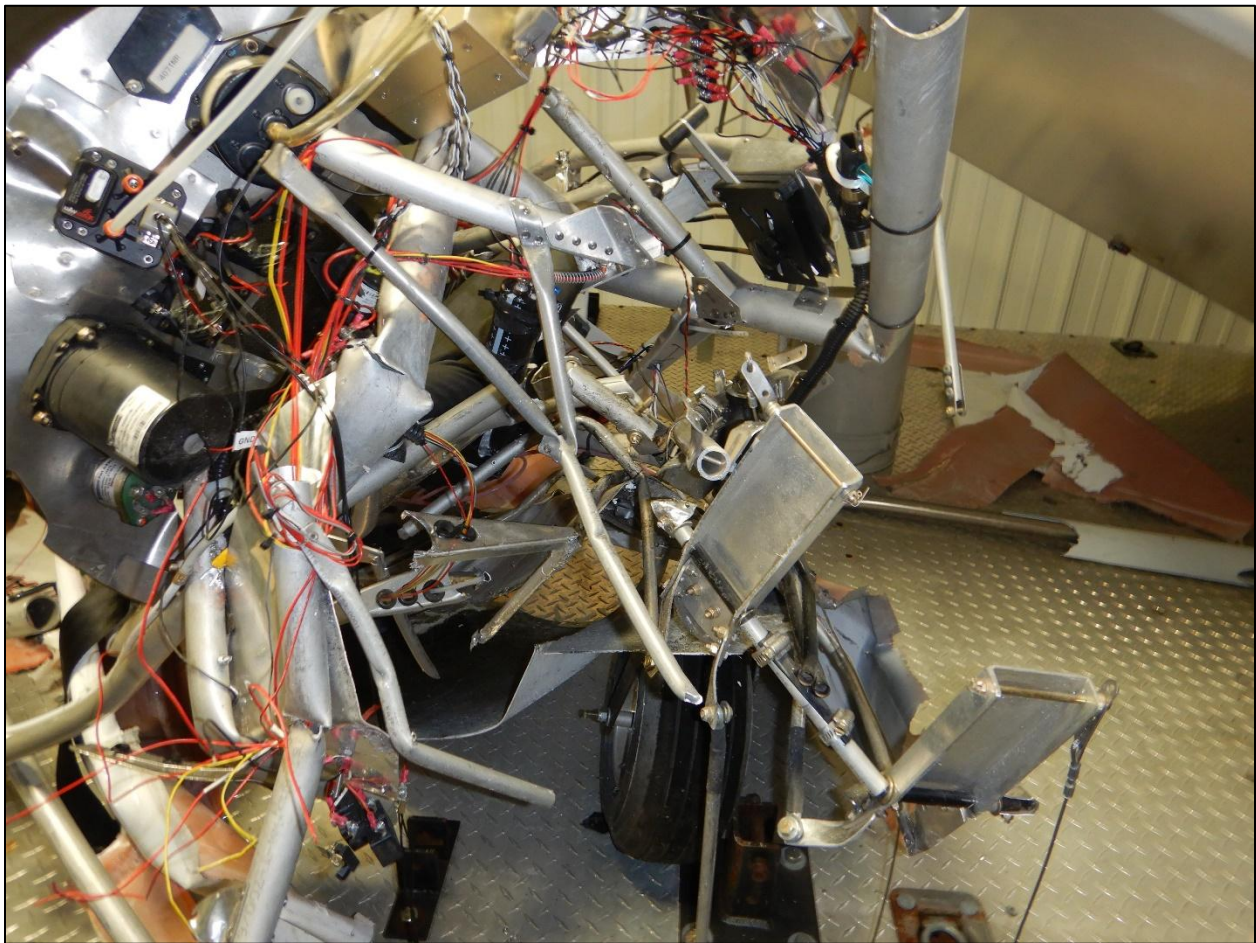


Figure 21-Forward fuselage, instrument panel and forward seat rudder pedal assembly.

Submitted by:

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