

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA23FA219

WING EXAMINATION SUMMARY

April 17, 2024

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A. ACCIDENT

Location: Reliance, TN
Date: May 7, 2023
Time: 1849 Eastern Daylight Time
2249 COORDINATED UNIVERSAL TIME (UTC)
Airplane: N725AS, Cessna 182Q

B. WING EXAMINATION SUMMARY

IIC	Timothy W. Monville NTSB-OAS/ERA Washington, DC	Timothy W. Monville	Digitally signed by Timothy W. Monville Date: 2025.05.07 15:21:05 -04'00'
Party Coordinator	Ricardo Asensio Textron Aviation Wichita, KS	<i>Ricardo Asensio</i>	

C. SUMMARY

On May 7, 2023, about 1849 eastern daylight time, a Cessna 182Q, N725AS was substantially damaged when it was involved in an in-flight breakup near Reliance, TN. The private pilot was fatally injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

According to Federal Aviation Administration (FAA) Automatic Dependent Surveillance - Broadcast (ADS-B) data and air traffic control audio information, after takeoff air traffic control communications with several air traffic control facilities appropriate for the route of flight occurred. At 1844:00, the pilot established contact with the R41 controller of the Atlanta Air Route Traffic Control Center and advised the controller that the flight was at 8,900 ft mean sea level (msl). The controller acknowledged the transmission and provided the altimeter setting of 30.02 inches of Mercury, which the pilot correctly read back. At 1845:04, the controller asked the pilot if he was assigned 8,900 ft msl, to which he promptly replied that he was assigned 9,000 ft msl but was getting "bounced around a little bit." The controller advised the pilot that the flight appeared to be out of the southern edge of the weather and appeared to be "clear of anything I am showing uh although we do show moderate or greater." At about 1847, the flight was at the leading edge of precipitation and building cumuliform clouds with multiple pilot reports reporting moderate to severe turbulence with one pilot reporting extreme turbulence.

The flight continued on the southeasterly heading then after 1847:22 turned on a southwesterly heading with altitude and heading deviations. After 1848:18, the airplane turned right that was not announced by the pilot or instructed by the controller and one second later the controller broadcast the call sign of the airplane which the pilot responded and was his last transmission. At 1848:24, the controller informed the pilot, "it looks like you are in a little bit of a descent in a turn is everything alright." The pilot did not reply to that communication or subsequent attempts by the controller and another aircraft.

An Alert Notice (ALNOT) was issued for the missing airplane at 1852 EDT and a search was initiated by ground personnel and air assets, including the use of drone aircraft; however, adverse weather required the search to be called off late in the evening. The wreckage was located the following morning in a wooded area behind a private residence. The right wing was visually located on May 8, 2023 between 0830 and 0930 EDT lying on or adjacent to a logging road, but was stolen prior to the NTSB teams arrival the morning of May 9th. The left wing was located by local personnel on or about May 16, 2023. Both wings were later transported to the salvage facility for examination by NTSB.

D. DETAILS OF THE EXAMINATION

1.0 Initial Wing Locations

1.1 Left Wing

A local individual found the left wing on or about May 16, 2023 in a wooded area at 35.216771° north latitude and -084.419110° west longitude. That location when plotted on Google Earth was located about 0.56 nautical mile and 166° from the location of the main wreckage. The wing was retained and transported to the wreckage storage facility for further examination.



Figure 1: View of the Left Wing at the As-Found Location.

1.2 Right Wing

The right wing was located by first responders at 35.214417° north latitude and -084.423233° west longitude. That location when plotted Using Google Earth was located about 0.69 nautical mile and 185° degrees from the main wreckage. NTSB access to that location on May 9, 2023 revealed the wing had been stolen. Law enforcement was immediately notified by NTSB of the stolen wing and performed an investigation. On May 13, 2023, the owner of a property at [REDACTED] Reliance, TN, reported to Polk County Sheriff's Office (Polk County SO) finding a wing on his property. The stolen wing was recovered and transported to the wreckage storage facility for further examination. Through an investigation by the Polk County SO, one individual was charged with Tampering with Evidence (T.C.A 39-16-503) and Theft of Property (T.C.A. 39-14-103)¹.

¹ Refer to Polk County Sheriff's Office TIBRS Incident Report, Incident # 2023-05-17441.



Figure 2: View of the Right Wing On a Logging Road As Observed By FAA Before the Wing was Stolen. Arrow Points to Left Side Fuselage Skin Normally Located Between Fuselage Stations 156.0 and 172.0.

Examination of photographs of the right wing provided by FAA inspectors revealed a section of the left side of fuselage skin was found embedded into the fractured right aileron at approximately wing station 154.0 (Figure 2). The skin was associated with the left side of the fuselage between fuselage stations (FS) 156.0 and 172.0.

2.0 Wing Follow-Up Examination

2.1 Left Wing

Examination of the left wing as first viewed was laying on the salvage facility floor (Figure 3).



Figure 3: View of Left Wing.

The recovered left wing consisted of the nearly the full chord of the wing from the wing root to wing station (WS) 100², full span of attached flap, full length of wing lift strut, and a total length of about 155 inches of main spar with attached sections of leading edge skin, and 1 flap cable. The inboard 31 inches of leading edge skin was separated, and the leading edge skin was also separated from WS 155 to WS 208. The wing was missing 108 inches of structure behind the main spar from WS 100 to the WS 208, which included the aileron. At WS 100 a semi-circular indentation was noted on the leading edge. The indentation was 14 inches in diameter. The main spar at WS 100 exhibited overload fractured and the spar was displaced forward.

The leading edge at WS 155 exhibited an impact damage. Black transfer with sharp metal transfer was noted on the upper wing skin at WS 159, or about 2 inches forward of the main spar rivet line.

The flap remained attached at all hinges and the flap rod was bent 90° and fractured due to overload. One flap cable remained attached at the bellcrank and exhibited overload fracture about 137 inches from the bellcrank (Figure 4). The missing flap cable still had the pin in place at the bellcrank.

² From WS 100 to the wingtip normally measures 108 inches.

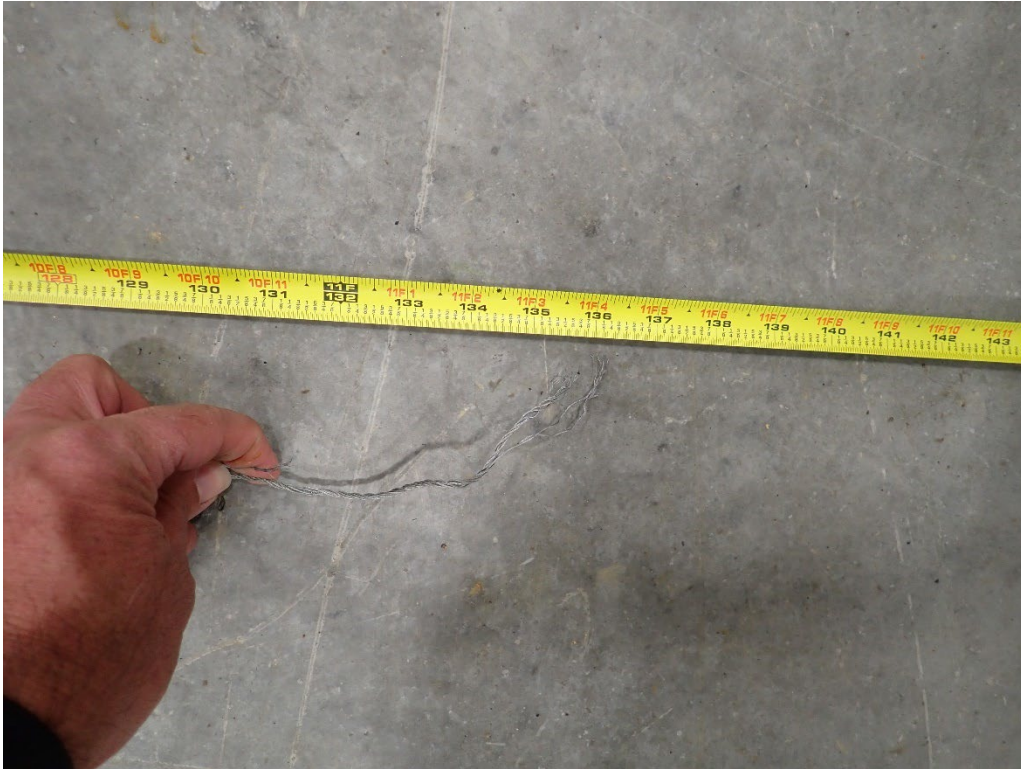


Figure 4: View of Overload Fractured Flap Cable.

The top side of the main spar was displaced aft, while the aft spar was separated. The fuel tank finger screen was clean, and the fuel cap was in-place.

The lift strut remained attached to the wing, and at the lower fitting the bolt and nut were in-place. The wing lift strut lower fitting was displaced aft, and a piece of airframe fitting remained trapped at the lower fitting. The upper wing lift strut fitting was displaced forward. There was no damage to the leading edge of the lift strut. No aileron cables were noted inside or remaining attached to the wing.

2.2 Right Wing

The recovered right wing was nearly full span and chord except for missing: inboard section of leading edge skin, outboard section of aileron, aileron cable, flap cable, wingtip, and fractured lift strut (Figure 5).



Figure 5: View of the Bottom of the Right Wing.

Further examination of the right wing revealed the outer approximately 52 inches of the aileron was separated. The separated section of aileron was missing from the 2nd hinge outboard. The installed portion of the aileron and full span of flap remained attached at all hinges. One aileron control cable remained attached to the aft connection of the aileron bellcrank and the cable was fractured due to tension overload at the wing root. The other aileron cable was not attached to the forward bellcrank which was deformed (Figure 6).



Figure 6: View of Deformed Forward Aileron Bellcrank.

One flap cable remained attached to the flap bellcrank and exhibited tension overload failure about 134 inches from the bellcrank (Figure 7). The other flap cable was not attached to the intact bellcrank; the cable was not in place. There was no extension of the flap actuator (Figure 8), which equates to flaps retracted. The rod remained attached to the flap actuator and the flap.



Figure 7: View of the Overload Fractured Flap Cable.

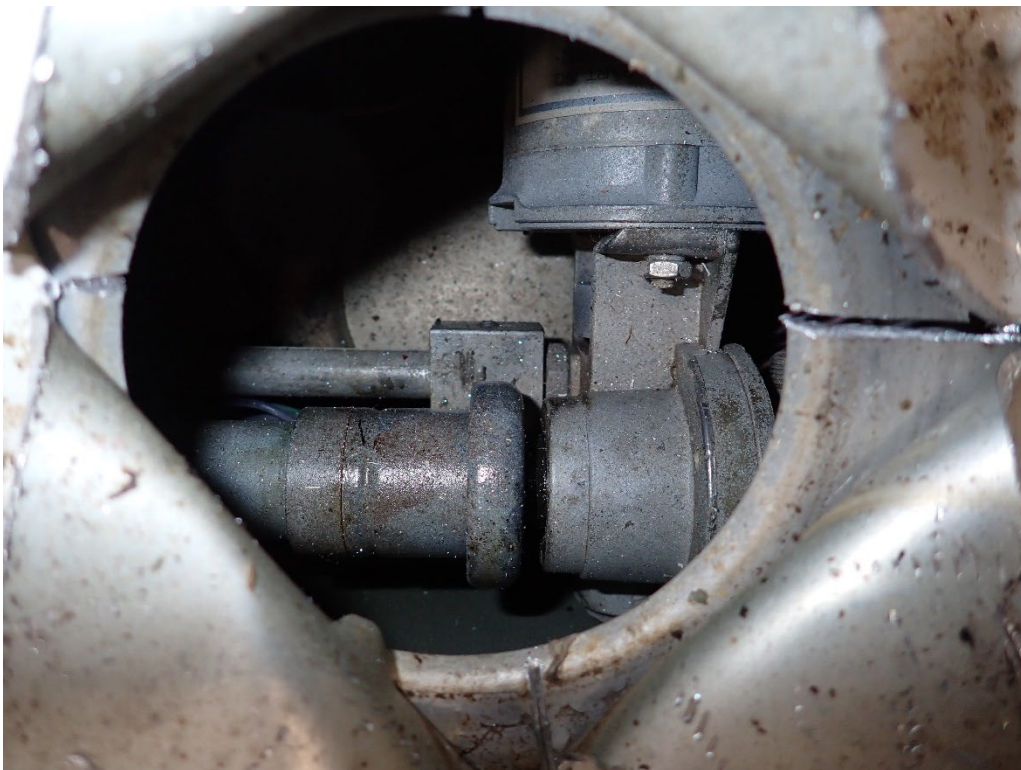


Figure 8: View of the Flap Actuator Showing No Extension or Flaps Retracted.

The fuel cap was not attached to the chain. The fuel tank finger screen was clean and the fuel tank was breached.

The lift strut³ exhibited impact damage and was fractured about 31 inches from the upper attach point (Figure 9); thus, 61 inches of the lift strut were missing. The impact was semi-circular with a dark deposit with paint cracking.



Figure 9: View of the Impact Damage on the Leading Edge of the Left Strut.

The inboard 68 inches of leading edge skin was separated. The rivets that secured the skin were intact on the upper surface but the lower skin was torn consistent with the primary aileron control cable pull through.

The leading edge main spar at the wing root was displaced up and aft (Figure 10), while the aft spar was displaced forward and slightly down. Further examination of the wing revealed the aft spar fitting and portion of fractured rear fuselage spar remained attached by the securing hardware (Figure 11). The fracture surfaces exhibited evidence of overload fracture with no evidence of preexisting cracking.

³ Normal length is 92 inches with fittings.

The aileron balance cable was pulled from the forward attach point at the aileron bellcrank, causing damage to the bolt and slot. The aft slot of the aileron stop was damaged.



Figure 10: View Showing the Up and Aft Deformation of the Main Spar at The Wing Root.



Figure 11 View Showing the Aft Spar of the Right Wing with Attached Fractured Section of Rear Fuselage Spar

3.0 Parts Retention

No parts were retained by NTSB at the completion of the examination of the wings.

Submitted by:

Timothy W. Monville
Sr. Air Safety Investigator