



# Aviation Investigation Final Report

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<b>Location:</b>	Wallis, Texas	<b>Accident Number:</b>	CEN23LA319
<b>Date &amp; Time:</b>	July 22, 2023, 16:00 Local	<b>Registration:</b>	N64JG
<b>Aircraft:</b>	ALISPORT SRL SILENT 2 ELECTRO	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Aircraft structural failure	<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

After completing a cross-country flight, the pilot set up his final glide at 79 knots (kts), the top of the normal operating airspeed range, to descend from 6,000 ft. About 4,000 ft, the pilot experienced a severe vibration and shaking of the glider. The pilot stated that the glider did not sustain a bird strike or encounter severe turbulence. The pilot deployed the spoilers to slow the glider for possible elevator flutter and the vibration stopped when the glider reached about 60 kts. The pilot verified glider control and slowly increased the airspeed, at which time the vibration returned. The pilot slowed the glider again and proceeded to land. The straight-in landing was uneventful, and the glider rolled to a stop. After exiting the glider, the pilot noticed the composite tail boom structure was cracked in multiple locations.

A materials examination of the tail boom structure revealed a damage pattern in the aft portion of the tail boom that contained multiple cracks orientated at  $\pm 45^\circ$  relative to the transverse plane, consistent with torsion loading in both clockwise and counterclockwise rotation directions. Thus, a flutter event likely produced high alternating torsion loads on the fuselage and subsequent damage. The examination found no clear evidence of preexisting damage or weakness that would have led to reduced stiffness of the fuselage structure.

The glider sustained a vibration event consistent with flutter while operating below the design maneuvering airspeed. The vibrations dissipated as the glider slowed, which also was consistent with flutter. Flutter could occur due to operation outside of the design flight envelope, loose flight controls, changes in control surface mass, or reduced stiffness in the control panel, wing, stabilizer, or fuselage. Based on the available evidence, the reason for the flutter event could not be determined.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The failure of the tail boom structure due to cyclic torsion overloading as of a result of flutter in the empennage. The reason for the flutter could not be determined.

### Findings

<b>Aircraft</b>	Fuselage main structure - Failure
<b>Not determined</b>	(general) - Unknown/Not determined

## Factual Information

### History of Flight

Maneuvering	Aircraft structural failure (Defining event)
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On July 22, 2023, about 1600 central daylight time, an Alisport Srl Silent 2 Electro glider, N64JG, sustained substantial damage when it was involved in an accident near Wallis, Texas. The pilot was not injured. The glider was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the pilot, after completing a cross-country flight, he set up his final glide at 79 kts to descend from 6,000 ft. About 4,000 ft while in straight-and-level flight, he experienced a severe vibration and shaking of the glider. The pilot stated that the glider did not sustain a bird strike or encounter severe turbulence. The pilot slowed the glider, fearing elevator flutter, and deployed the spoilers to slow down. Upon reaching an airspeed around 60 kts, the vibration stopped. The pilot verified glider control and slowly increased the airspeed, at which time the vibration returned. About 2 miles from his gliderport, the pilot again slowed the glider and proceeded for a straight-in landing. The landing was uneventful, and the glider rolled to a stop. After exiting the glider, the pilot noticed the composite tail boom structure was cracked in multiple locations (see Figure 1).



Figure 1. Tail boom structure cracks

The damaged tail boom structure was sectioned from the glider and sent to the National Transportation Safety Board (NTSB) Materials Laboratory for examination. According to the NTSB Materials Laboratory, the fuselage skin was made from fiber-reinforced polymer composite materials with both glass fiber and carbon fiber fabric reinforcement. The fuselage skin was constructed of two halves (left and right) that were spliced together at the upper and lower sides. At each splice location, the skin layers butted together, and strips of glass-fiber reinforced fabric were bonded to the interior surfaces to form single-strap butt joints.

Skin cracks were located about 20 inches forward of the vertical stabilizer and were oriented about 45° relative to the transverse plane on both the left and right side. Additionally, longitudinal cracks were observed on the upper and lower sides of the skin. The 45° cracks intersected the longitudinal crack at the upper side of the skin, and on the lower side the 45° cracks were separated from the longitudinal crack.

A portion of the upper skin containing the longitudinal crack, and a section of the upper splice was cut from the remainder of the fuselage skin. On the interior side, a portion of the strap had a lighter appearance, and the change in color was consistent with a disbond between the strap and the skin.

Scanning electron microscope images showed all fibers were observed in bundles, consistent with fabric construction. No evidence of glass fiber roving was observed, including the resin pocket between the strap and the skin.

According to the glider flight manual, the normal operating airspeed range is between 40 – 81 kts, the design maneuvering airspeed is 81 kts, and the never exceed airspeed in still air is 118 kts.

Availability of information about the construction and various test and maintenance procedures was limited due to the glider manufacturer and subsequent companies no longer being in operation.

### Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	70, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Single
<b>Other Aircraft Rating(s):</b>	Glider; Helicopter	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	Airplane; Helicopter	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	BasicMed Without waivers/limitations	<b>Last FAA Medical Exam:</b>	December 8, 2022
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	March 10, 2022
<b>Flight Time:</b>	5000 hours (Total, all aircraft), 64 hours (Total, this make and model), 4800 hours (Pilot In Command, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	ALISPORT SRL	<b>Registration:</b>	N64JG
<b>Model/Series:</b>	SILENT 2 ELECTRO	<b>Aircraft Category:</b>	Glider
<b>Year of Manufacture:</b>	2014	<b>Amateur Built:</b>	Yes
<b>Airworthiness Certificate:</b>	Experimental (Special)	<b>Serial Number:</b>	2067
<b>Landing Gear Type:</b>	Retractable - None; Ski/wheel	<b>Seats:</b>	1
<b>Date/Type of Last Inspection:</b>	May 13, 2023 Condition	<b>Certified Max Gross Wt.:</b>	660 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Electric
<b>Airframe Total Time:</b>	370 Hrs at time of accident	<b>Engine Manufacturer:</b>	LZ Design
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	FES-SIL-100
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>		<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>		<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Few / 6000 ft AGL	<b>Visibility</b>	
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	/	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>		<b>Temperature/Dew Point:</b>	36.7°C
<b>Precipitation and Obscuration:</b>			
<b>Departure Point:</b>	Wallis, TX	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Wallis, TX	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>		<b>Type of Airspace:</b>	Class E

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	29.621631,-96.064014(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Sauer, Aaron
<b>Additional Participating Persons:</b>	Jonathan Petitjean; FAA; Houston, TX
<b>Original Publish Date:</b>	November 7, 2024
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 3</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=192697">https://data.ntsb.gov/Docket?ProjectID=192697</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).