Aviation Investigation Final Report

Location:	Clermont, Florida	**Accident Number:**	ERA19LA050
Date & Time:	November 17, 2018, 11:20 Local	**Registration:**	N494N
Aircraft:	ULTRALITE SRO Stingsport	**Aircraft Damage:**	Substantial
Defining Event:	Aircraft structural failure	**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot stated that he was in cruise flight when he received an automatic dependent surveillance-broadcast traffic alert of traffic approaching from his one o'clock position and closing at "a high rate of speed." The pilot went on to describe control inputs and airplane attitudes during his response to the perceived threat, which ultimately resulted in a loss of control and aerodynamic spin. During the pilot's attempted recovery from the spin, the nose of the airplane pitched forward uncontrolled and the airplane entered a high-speed, nose-down descent. It is likely that during these remedial actions to regain control, the structure surrounding the horizontal stabilizer failed, and the stabilizer separated from the airplane. The pilot then successfully deployed the airplane's ballistic parachute system, and it landed in a pasture.

Examination of the failed structure surrounding the horizontal stabilizer revealed areas of delamination with dry glass fibers indicative of improper material layup with inadequate resin application. It could not be determined to what extent the inflight separation of the horizontal stabilizer was due to this defect, or whether the pilot's control inputs during the response to the traffic warning, departure from controlled flight, and subsequent attempted recovery attempt imparted forces onto the horizontal stabilizer that were beyond its nominal structural capability.

Probable Cause and Findings

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

An inflight failure of the airplane's horizontal stabilizer.

Findings

Aircraft	Horizontal stabilizer - Failure

Factual Information

History of Flight

Maneuvering	Loss of control in flight
Maneuvering	Attempted remediation/recovery
Maneuvering	Aircraft structural failure (Defining event)

On November 17, 2018, about 1120 eastern standard time, a TL-2000 StingSport, N494N, was substantially damaged when it was involved in an accident near Clermont, Florida. The sport pilot received minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

In a written statement, the pilot stated he was in cruise flight when he received an automatic dependent surveillance-broadcast traffic alert via a commercial application he had running on portable electronic device. The traffic was approaching from his one o'clock position and closed at "a high rate of speed."

The pilot stated that he then entered a shallow, descending turn to the left to increase separation with the traffic. As he levelled the airplane following the descent, he noted that his airspeed had increased to 138 knots. When he noted the airspeed, he "rapidly" reduced engine power below 50% at which point the airplane yawed and entered a counterclockwise spin. The pilot said he arrested the spin and that the airplane initially responded to elevator inputs to raise the nose and level off. Then, the nose of the airplane pitched forward uncontrolled, and the airplane entered a high-speed, nose-down descent. About this time, the pilot's head impacted the cockpit canopy and shattered it. The pilot deployed the airplane's ballistic parachute system and the airplane landed in a pasture.

Air traffic control services were not provided to the accident airplane, but examination of automatic dependent surveillance-broadcast track data revealed that if each airplane maintained its heading, airspeed, and altitude, the airplanes paths would have passed close to each other but would not have intersected.

Photographs of the accident site showed that the accident airplane came to rest upright with the nose landing gear collapsed. The horizontal stabilizer was separated from its mount and was located intact about 1,000 feet east of the main wreckage. The stabilizer mount plate and mounting studs were intact and undamaged, but the composite structure and adhesive joints surrounding them were torn and peeled away from the main tail structure. The elevator push-pull tube was fractured at the point where the tube exited the empennage, and the fracture surfaces displayed signatures consistent with overstress failure.

Postaccident examination of the horizontal stabilizer and its corresponding mount structure from the airplane revealed that the shelf (mount plate) was delaminated and partially

separated from the aft fuselage between the vertical flange and forward end of the shelf. Examination of the delaminated area revealed areas of dry glass fibers with little or no resin present. The dry areas encompassed about 30% to 40% of the delaminated area and were concentrated above and forward of the vertical flange location.

Pilot Information

Certificate:	Sport Pilot	**Age:**	53,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Sport pilot	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 27, 2017
Flight Time:	182.8 hours (Total, all aircraft), 67.4 hours (Total, this make and model), 79 hours (Pilot In Command, all aircraft), 8.3 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft), 2.5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	ULTRALITE SRO	**Registration:**	N494N
Model/Series:	Stingsport	**Aircraft Category:**	Airplane
Year of Manufacture:	2006	**Amateur Built:**	
Airworthiness Certificate:	Special light-sport (Special)	**Serial Number:**	TLUSA150
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	December 1, 2017 Annual	**Certified Max Gross Wt.:**	1320 lbs
Time Since Last Inspection:	18 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	337.5 Hrs at time of accident	**Engine Manufacturer:**	Rotax
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	912ULS
Registered Owner:		**Rated Power:**	
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	ISM,82 ft msl	**Distance from Accident Site:**	17 Nautical Miles
Observation Time:	16:56 Local	**Direction from Accident Site:**	120°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	90°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.18 inches Hg	**Temperature/Dew Point:**	22°C / 13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Arcadia, FL (X06)	**Type of Flight Plan Filed:**	None
Destination:	Apopka, FL (X04)	**Type of Clearance:**	None
Departure Time:	10:30 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	28.421388,-81.691108(est)

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian		
Additional Participating Persons:	Jason Mikulak; FAA/FSDO; Orlando, FL		
Original Publish Date:	December 14, 2021	**Investigation Class:**	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98653		