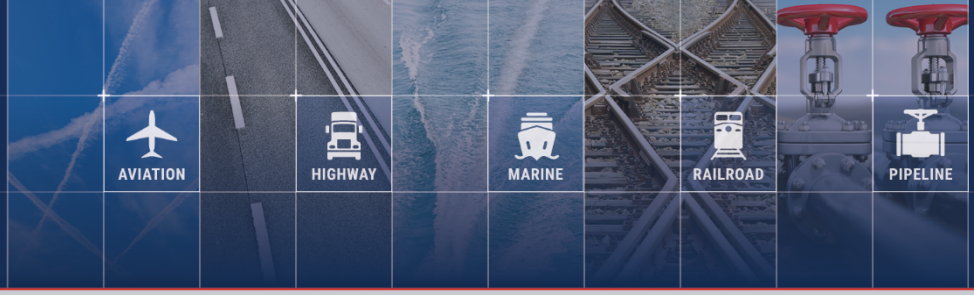

Aviation Investigation Final Report

Location:	Madera, California	**Accident Number:**	WPR19FA121
Date & Time:	April 25, 2019, 12:49 Local	**Registration:**	N797N
Aircraft:	TL Ultralight SRO STINGSPORT	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of control in flight	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor and the student pilot were conducting traffic pattern work, landings, and takeoffs. A pilot who was flying in the area reported hearing one of the accident airplane's pilots announce that they would perform an "emergency turn around at 500 ft." Two witnesses listening to communications at the airport reported that the last communication they heard from the accident airplane was that the pilot would be executing a simulated emergency landing to the runway. Data obtained from a GPS unit on board the accident airplane showed that about 1 minute after departure, at a GPS altitude of 764 ft above ground level and a groundspeed of 64 knots, the airplane began a 180° descending right turn back toward the airport. The final recorded data point was 16 seconds later, with a reported GPS altitude of 324 ft and a groundspeed of 21 knots. The airplane impacted terrain in a nose-down attitude about .5 nautical miles from the departure end of the runway. It could not be determined which pilot was manipulating the flight controls when the accident occurred.

Postaccident examination of the airframe and the engine did not reveal any evidence of preexisting mechanical malfunctions that would have precluded normal operation.

Toxicology testing of specimens from the flight instructor detected metoprolol, rosuvastatin, and glipizide, which were not impairing and, thus, would not have contributed to the accident. Toxicology testing of specimens from the student pilot detected tetrahydrocannabinol (THC), the active compound in marijuana. Although the concentration of THC found in cardiac blood suggests that marijuana usage may have occurred earlier that day, blood concentrations do not correlate well with impairment and cannot be used to prove that the user was under the influence of the drug at the time of testing. Thus, it is unlikely that the student pilot's use of marijuana contributed to the accident.

Based on the available evidence, it is likely that during the simulated engine failure on initial climb after takeoff, the pilot inadvertently exceeded the airplane's critical angle of attack, likely

by allowing the airspeed to decay, and the airplane experienced an aerodynamic stall at an altitude too low for recovery.

Probable Cause and Findings

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

The pilot's exceedance of the airplane's critical angle of attack during the simulated engine failure on initial climb after takeoff, which resulted in an aerodynamic stall and subsequent loss of control at too low of an altitude to recover.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Angle of attack - Not attained/maintained

Factual Information

History of Flight

Initial climb	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On April 25, 2019, about 1249 Pacific daylight time, a TL Ultralight Sro Stingsport airplane, N797N, was destroyed when it was involved in an accident near Madera, California. The flight instructor and student pilot were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

A pilot-rated witness reported that when he departed Madera Municipal Airport (MAE), Madera, California, the accident airplane was already in the traffic pattern. After about 30-40 minutes, the witness returned to MAE and heard one of the accident pilots announce that they would perform an "emergency turn around at 500 feet." After about 10 minutes, the witness made a radio call to the accident airplane inquiring about its location but did not get a response. He then departed MAE and observed the accident airplane on the ground about 0.5 nautical miles from the departure end of runway 30. Two other witnesses at MAE listening to communications reported that the flight instructor and student pilot were conducting traffic pattern work, and all communications were standard; the last communication they heard was that the pilot would be executing a simulated emergency landing to runway 12.

Review of data obtained from a portable GPS unit found on board the accident airplane indicated that the airplane arrived at MAE at 1226:52, about 15 minutes after departing Sierra Sky Park Airport (E79), Fresno, California. The data showed that, after two landings and takeoffs, the airplane lifted off runway 30 a third time at 1248:30. At 1249:31, when the airplane was at a GPS altitude of 764 ft and a groundspeed of 64 knots, it began a 180° descending right turn back toward MAE. The final recorded data point was 16 seconds later, at 1249:47, with a reported GPS altitude of 324 ft, a derived groundspeed of 21 knots, and a track of 183°.

It could not be determined which pilot was manipulating the flight controls when the accident occurred.

Pilot Information

Certificate:	Commercial	**Age:**	76,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	Glider; Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Glider; Helicopter; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	None	**Last FAA Medical Exam:**	
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 11000 hours (Total, all aircraft), 0 hours (Total, this make and model)		

Student pilot Information

Certificate:	Student	**Age:**	28,Male
Airplane Rating(s):	None	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 None	**Last FAA Medical Exam:**	November 8, 2018
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 31.7 hours (Total, all aircraft), 30.9 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	TL Ultralight SRO	**Registration:**	N797N
Model/Series:	STINGSPORT No Series	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	TLUSA118
Landing Gear Type:		**Seats:**	
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	
Airframe Total Time:		**Engine Manufacturer:**	
ELT:		**Engine Model/Series:**	
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:	KMAE,253 ft msl	**Distance from Accident Site:**	
Observation Time:	12:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	260°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.9 inches Hg	**Temperature/Dew Point:**	34°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Fresno, CA (E79)	**Type of Flight Plan Filed:**	None
Destination:	Madera, CA	**Type of Clearance:**	None
Departure Time:	12:12 Local	**Type of Airspace:**	

Airport Information

Airport:	Madera Municipal Airport MAE	**Runway Surface Type:**	
Airport Elevation:	255 ft msl	**Runway Surface Condition:**	Dry;Rough;Vegetation
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	36.998054,-120.12638(est)

Examination of the accident site revealed that the airplane impacted terrain in a nose-down attitude and came to rest upright on a heading of 167° magnetic, about 0.45 nautical miles northwest from the departure end of runway 30. The wreckage was contained to an area 30 ft wide and 18 ft long. The three-blade wooden propeller was separated at the hub. The cockpit area with the instrument panel was crushed and displaced aft. Both wings remained attached to the fuselage by their respective mounts. The hinged ailerons and split-type flaps were affixed to the aft spar of each wing. The empennage remained attached to the fuselage through the elevator control push rod and rudder control cables and was bent upwards. The vertical stabilizer, horizontal stabilizer, rudder, and elevators remained attached to the aft empennage and were undamaged. All three-landing gear remained attached to the fuselage. All flight controls were attached to the airframe, and the continuity of the flight control system from the left and right cockpit controls to all primary flight control surfaces was confirmed.

The engine was displaced aft into the firewall as result of the impact. Both carburetors were displaced from the intake manifolds. Each carburetor was disassembled and found unremarkable. The top and bottom spark plugs were removed and exhibited signatures consistent with normal operation. The gearbox was removed and examined; evidence of rotation was visible, as the propeller shaft was pushed aft into the crankcase with a corresponding mark on the crankcase. The propeller shaft was rotated by hand within the gearbox, and no anomalies were noted. Rotational continuity was established throughout the engine and valvetrain when the propeller was rotated by hand. Examination of the engine and airframe did not reveal any evidence of preexisting mechanical malfunctions.

Medical and Pathological Information

The flight instructor's last valid medical certificate was issued on April 2, 2007 and expired for all classes on April 30, 2009. His last medical examination was dated September 20, 2018, at which time the examiner deferred issuance to the Federal Aviation Administration (FAA), and the flight instructor was not issued a medical certificate at that time.

According to the autopsy report from the Sheriff's Department Madera County Coroner Division, the cause of death of the flight instructor was massive blunt impact injuries. The FAA's Forensic Sciences Laboratory conducted toxicology tests on specimens from the flight instructor. The results were negative for carboxyhemoglobin and ethanol. Testing identified metoprolol, rosuvastatin, and glipizide, which are not considered impairing.

According to the autopsy report from the Sheriff's Department Madera County Coroner Division, the cause of death of the student pilot was multiple blunt impact injuries. The FAA's Forensic Sciences Laboratory conducted toxicology tests on specimens from the student pilot. The results were negative for carboxyhemoglobin and ethanol. The testing identified 10.1 ng/mL Delta-9-THC in blood (aortic), Delta-9-THC in liver, 27.3 ng/mL 11-Hydroxy-Delta-9-THC in liver, 46 ng/mL Carboxy-Delta-9-THC in blood (aortic), and 1438 ng/mL Carboxy-Delta-9-THC in liver. The marijuana plant (Cannabis) contains chemicals called cannabinoids; tetrahydrocannabinol (THC) is the primary psychoactive cannabinoid compound. THC has mood-altering effects, including euphoria and relaxation; in addition, marijuana causes alterations in motor behavior, perception, and cognition. THC is fat soluble, so it is stored in fatty tissues and can be released back into the blood long after consumption. While the psychoactive effects may last a few hours, THC can be detected in the blood for days or weeks. Thus, blood test results do not necessarily reflect recent use and cannot be used to prove that the user was under the influence of the drug at the time of testing.

Administrative Information

Investigator In Charge (IIC):	Smith, Maja		
Additional Participating Persons:			
Original Publish Date:	July 15, 2021	**Investigation Class:**	3
Note:	The NTSB traveled to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=99323		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available here.