Aviation Investigation Final Report

Location:	Brevard, North Carolina	**Accident Number:**	ERA09LA329
Date & Time:	June 8, 2009, 16:40 Local	**Registration:**	N130DS
Aircraft:	SORENSON LIGHTNING	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The private pilot/owner of the experimental amateur-built airplane was conducting a training flight with a certified flight instructor (CFI). The airplane was in a left turn in the airport traffic pattern when its wings began to rock back and forth, which was followed by a steep uncontrolled descent. A witness reported the engine was "spitting and sputtering" and then lost power. The airplane struck an 80-foot-tall tree, about mid-span, before coming to rest inverted in a heavily wooded area, about 1/4 mile from the runway. Examination of the wreckage did not reveal any preimpact malfunctions and evidence of fuel was present at the accident site. The airplane's most recent condition inspection was performed 17 months and 73 operational hours prior to the accident. The CFI previously reported 7,270 hours of total flight experience, and had accumulated about 70 hours in the accident airplane. At the time of the accident, the private pilot had accumulated about 260 hours of total flight experience, which included about 30 flight hours in the accident airplane. All 30 hours were flown with the CFI. The private pilot/owner had a history of post-traumatic stress syndrome. Toxicology testing indicated the use of a non-impairing prescription antidepressant and of marijuana, though the source of the specimens did not permit the assessment of whether he may have been impaired by the marijuana use. It is unclear whether the private pilot/owner was experiencing impairment from any cause, or whether his actions were relevant to the accident. Winds reported at a nearby airport were variable at 6 knots, gusting to 18 knots.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Both pilots failure to maintain adequate airspeed while maneuvering after a loss of engine power for undetermined reasons, which resulted in an aerodynamic stall.

Findings

Aircraft	Airspeed - Not attained/maintained
Environmental issues	Gusts - Not specified
Aircraft	(general) - Failure
Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Approach-VFR pattern downwind	Loss of engine power (total)
Approach-VFR pattern downwind	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On June 8, 2009, about 1640 eastern daylight time, an experimental amateur-built, Lightning, N130DS, was substantially damaged when it impacted trees while attempting to land following loss of engine power at the Transylvania County Airport (3NR3), Brevard, North Carolina. The certificated flight instructor and a private pilot were fatally injured. Visual meteorological conditions prevailed and no flight plan had been filed for the instructional flight that was conducted under Title 14 Code of Federal Regulations Part 91.

The airplane was owned and built by the private pilot, and was based at 3NR3.

According to a Federal Aviation Administration (FAA) inspector, a witness observed the airplane depart 3NR3 between 1430 and 1500. A witness at the Oconee County Regional Airport, Clemson, South Carolina, located about 40 miles south-southwest of 3NR3, reported that the airplane was practicing touch-and-go landings at the airport between 1530 and 1600. At 1630, witnesses at 3NR3 heard a pilot from the airplane contact the airport's Unicom operator. One witness observed the airplane fly over the airport from the south, and enter the left downwind leg of the traffic pattern for runway 9, a 2,903-foot-long, 50-foot-wide, asphalt runway. The witness stated that the airplane was at the normal traffic pattern altitude and that the engine sounded normal. The witness then went indoors and noticed that he did not hear any further communications from the airplane over the Unicom frequency.

A witness, located in the vicinity of the accident site, stated that he observed the airplane in a left turn. The engine was "spitting and sputtering" and then quit. The airplane descended behind some trees, which was followed by a "loud thud."

A witness, driving in her car, stated that she observed the airplane make a "very sharp left turn." It then "began to roll left and right, then it dove straight down into tress and broke apart." She could not hear any sounds associated with the airplane.

Examination of the wreckage by an FAA inspector revealed that it impacted in a heavily wooded area, about 1/4 mile from the runway. The airplane struck an 80-foot tall tree, about mid-span, before coming to rest inverted. The right wing separated and was located approximately 15 feet from the tree. The empennage was separated and remained attached to

the airframe via cables. Fragments of a composite propeller blade were located at the accident site. The airplane was equipped with a Jabiru 3300cc engine, which was impact damaged.

Both the left and right wing fuel tanks were damaged. The fuel selector was found in the left tank position. Witnesses who observed the airplane shortly after the accident reported that they observed fuel leaking from the left wing.

Further examination of the engine and flight controls by a Safety Board investigator did not reveal any evidence of any preimpact mechanical malfunctions.

The flight instructor, age 63, held a commercial pilot certificate with ratings for airplane single-engine land and instrument airplane. He also held a flight instructor's certificate with ratings for airplane single-engine and instrument airplane.

He reported 7,270 hours of total flight experience, on his most recent application for an FAA second-class medical certificate, which was issued on October 2, 2008. In addition, he had accumulated about 70 hours in the accident airplane.

The private pilot, age 59, held a private pilot certificate with a rating for airplane single-engine land.

He reported 216 hours of total flight experience, on his most recent application for an FAA third-class medical certificate, which was issued on April 1, 2004.

Review of the private pilot's logbook revealed that at the time of the accident, he had accumulated about 260 hours of total flight experience, which included about 30 flight hours in the accident airplane. All 30 hours were flown with the flight instructor.

According to maintenance records, the airplane's most recent condition inspection was performed on January 8, 2008, at zero total hours in service. At the time of the accident, the airplane had been operated for about 73 hours.

An autopsy was performed on both pilots, on June 11, 2009, by the Wake Forest University School of Medicine, Department of Pathology, Winston-Salem, North Carolina. According to the autopsy reports, both pilots sustained multiple blunt force traumatic injuries.

Toxicological testing was performed on the both pilots by the FAA Forensic Toxicology Research Laboratory, Oklahoma City, Oklahoma. The toxicological testing on the flight instructor was negative for drugs and alcohol. Toxicological testing on private pilot revealed:

"0.134 (ug/ml, ug/g) DULOXETINE detected in Blood
DULOXETINE detected in Urine
0.135 (ug/ml, ug/g) TETRAHYDROCANNABINOL (MARIHUANA) detected in Lung
0.0032 (ug/ml, ug/g) TETRAHYDROCANNABINOL (MARIHUANA) detected in Blood

0.1409 (ug/ml, ug/g) TETRAHYDROCANNABINOL CARBOXYLIC ACID (MARIHUANA) detected in Urine
0.1113 (ug/ml, ug/g) TETRAHYDROCANNABINOL CARBOXYLIC ACID (MARIHUANA) detected in Liver
0.0115 (ug/ml, ug/g) TETRAHYDROCANNABINOL CARBOXYLIC ACID (MARIHUANA) detected in Lung
0.0101 (ug/ml, ug/g) TETRAHYDROCANNABINOL CARBOXYLIC ACID (MARIHUANA) detected in Blood"

Staff at the pathology department where the autopsies were conducted indicated that the private pilot's blood specimen submitted to the FAA was collected from the chest cavity.

The private pilot had a history of "stable post-traumatic stress syndrome requiring no medication or therapy" documented in his FAA medical records. The private pilot's wife stated that he had no recent changes in his health or mood. She further stated that private pilot had not displayed any evidence of depression, and that he was "passionate" and "enthusiastic" about aviation.

A weather observation taken at an airport located about 11 miles northeast of the accident site, at 1654, reported variable winds at 6 knots, gusting to 18 knots, visibility 10 statute miles, ceiling 4,000 feet overcast, temperature 22 degrees Celsius (C), dew point 17 degrees C, altimeter 30.02 inches of mercury.

Flight instructor Information

Certificate:	Commercial; Flight instructor	**Age:**	63,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	October 2, 2008
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	7270 hours (Total, all aircraft), 70 hours (Total, this make and model)		

Student pilot Information

Certificate:	Private	**Age:**	59,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	April 1, 2004
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 7, 2009
Flight Time:	260 hours (Total, all aircraft), 30 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	SORENSON	**Registration:**	N130DS
Model/Series:	LIGHTNING	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	10
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	January 8, 2008 Condition	**Certified Max Gross Wt.:**	
Time Since Last Inspection:	73 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	69 Hrs at time of accident	**Engine Manufacturer:**	JABIRU
ELT:		**Engine Model/Series:**	3300
Registered Owner:	SORENSON DUANE	**Rated Power:**	120 Horsepower
Operator:	SORENSON DUANE	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	AVL,2117 ft msl	**Distance from Accident Site:**	11 Nautical Miles
Observation Time:	16:54 Local	**Direction from Accident Site:**	10°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 4000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots / 18 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.02 inches Hg	**Temperature/Dew Point:**	22°C / 17°C
Precipitation and Obscuration:			
Departure Point:	Clemson, SC (CEU)	**Type of Flight Plan Filed:**	None
Destination:	Brevard, NC (22W)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	

Airport Information

Airport:	Transylvania County 3NR3	**Runway Surface Type:**	Asphalt
Airport Elevation:	2110 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	09	**IFR Approach:**	None
Runway Length/Width:	2903 ft / 50 ft	**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	35.270278,-82.644165(est)

Administrative Information

Investigator In Charge (IIC):	Schiada, Luke
Additional Participating Persons:	Randy S DeBerry; FAA/FSDO; Charlotte, NC
Original Publish Date:	July 22, 2010
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=73985