Aviation Investigation Final Report

Location:	Ashville, Alabama	**Accident Number:**	ERA18FA118
Date & Time:	March 28, 2018, 12:23 Local	**Registration:**	N3167C
Aircraft:	Cessna R182	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot departed on a day visual flight rules cross-country flight. About 7 miles from the departure airport, he contacted air traffic control (ATC) and requested flight following services, stating that he was climbing from 700 ft mean sea level (msl) (about 131 ft above ground level) to 2,500 ft msl. The controller issued the pilot a discrete transponder code and the pilot acknowledged; however, there were no further communications with the pilot. The pilot was reported missing by family members when he did not arrive at his destination, and the wreckage was located 2 days later in heavily-wooded, level terrain.

Postaccident examination of the engine revealed no evidence of any preimpact mechanical malfunctions or failures that would have precluded normal operation.

Toxicology testing identified tetrahydrocannabinol (THC) and its primary metabolite in liver, kidney, and lung specimens. While this indicated that the pilot had used marijuana at some point before the flight, without results from a blood specimen, it could not be determined when he used it or whether it may have had impairing effects at the time of the accident. A coworker of the pilot stated that he and the pilot were working into the early morning on the day of the accident and he believed the pilot did not have much, if any, sleep before departing on the accident flight.

The pilot's communications with ATC suggest that the flight up to that point had been routine, and the reason for the airplane's descent and impact with terrain could not be determined. Additionally, there was insufficient evidence to determine whether fatigue, impairment, or incapacitation may have contributed to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Descent and impact with terrain for reasons that could not be determined.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

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

HISTORY OF FLIGHT

On March 28, 2018, about 1223 central daylight time, a Cessna R182, N3167C, was destroyed when it impacted terrain near Ashville, Alabama, shortly after takeoff from Northeast Alabama Regional Airport (GAD), Gadsden, Alabama. The private pilot was fatally injured. The airplane was privately owned and was being operated by the pilot as a Title 14 *Code of Federal Regulations* Part 91 personal flight. Visual meteorological conditions prevailed and no flight plan was filed for the flight, which was destined for Louis Armstrong New Orleans International Airport (MSY), New Orleans, Louisiana.

According to a review of air traffic control transcripts obtained from the Federal Aviation Administration (FAA), the pilot contacted Birmingham-Shuttlesworth International Airport (BHM), Birmingham, Alabama, shortly after departure. The pilot reported that he was 7 miles south of GAD and climbing through 700 ft to 2,500 ft and requested flight following. The airport tower controller gave the pilot a transponder code and the pilot advised the code was "in the box." There were no further communications with the pilot.

The pilot was reported missing by family members when he did not arrive at MSY. An alert notice was issued and the Air Force Rescue Coordination Center alerted the Civil Air Patrol (CAP) to the missing airplane. The CAP began a ground and air search on March 29, which was limited due to poor weather conditions. On March 30, about 1815, a CAP airplane spotted the wreckage and guided ground crews to the location.

PERSONNEL INFORMATION

The pilot held a private pilot certificate with an airplane single-engine land rating. His most recent FAA third-class airman medical certificate was issued on May 30, 2017, with the limitation, "Must have available glasses for near vision. Not valid for night flying or by color signal control." At that time, he reported 425 total hours of flight experience. A review of the pilot's logbooks revealed that he had accumulated about 638 total hours of flight experience.

A coworker of the pilot stated that he and the pilot worked the night before the accident from 2130 to 0230, then went back to the hotel. They met the next morning, the day of the accident, at 0700. He stated he did not sleep much the night before and believed the pilot slept even less because he had been up working after they returned to the hotel.

AIRCRAFT INFORMATION

The four-seat, high-wing, retractable-gear airplane was manufactured in 1978. It was powered by a Lycoming O-540, 235-horsepower engine. According to airplane maintenance records, an annual inspection was completed on September 19, 2017, at 2699.4 total aircraft hours.

METEOROLOGICAL INFORMATION

At 1156, the weather conditions reported at GAD included wind from 210° at 11 knots, gusting to 17 knots; 10 statute miles visibility; few clouds at 4,000 ft; temperature 24°C, dew point 16°C; and an altimeter setting of 30.09 inches of mercury.

AIRPORT INFORMATION

The field elevation at GAD was 569.2 ft mean sea level (msl), the minimum safe altitude in the area was 2,200 ft msl.

WRECKAGE AND IMIPACT INFORMATION

The initial tree impact occurred on flat, heavily-wooded terrain at an elevation of about 525 ft. The trees were about 50 ft tall. About 15 ft beyond the initial tree impact was an additional tree strike, with a portion of a wing strut in the top branches. A portion of the right elevator was located in an adjacent tree about 40 ft high. The wreckage path was about 200 ft long; the main wreckage came to rest on a heading of 210°. The main wreckage was about 140 ft from the initial tree strike and comprised the cockpit, portions of the fuselage, wings, and empennage. All flight control surfaces were located at the accident site. Sections from the top and bottom of the fuselage, cockpit instruments, and the cockpit panel were located along the debris path. The rudder control cables were connected in the cockpit and empennage. The aileron cables were separated from the cockpit controls; the aileron bellcranks were not located.

The propeller was separated from the engine and located about 20 ft beyond the main wreckage; two of the three blades remained attached to the propeller hub and the hub remained attached to the propeller flange. The separated blade was found adjacent to the main wreckage. All three of the propeller blades exhibited leading edge gouging and trailing edge S-bending. The engine was separated from the airframe and located farthest from the initial tree strike. In addition, several pieces of the impacted tree exhibited 45° angular cuts consistent with propeller contact.

The left main landing gear remained attached to the fuselage and was in the extended position. The nose and right main landing gear were separated.

The cockpit instruments were heavily damaged. The dual magneto remained attached to the engine and was impact damaged. Water and mud were present when the magneto was removed from the engine, and no spark was produced when it was rotated by hand. The spark plugs from cylinder Nos. 1, 3, and 5 appeared normal. The upper spark plugs from cylinder Nos. 2 and 4 were soaked with oil and covered with dirt and the No. 6 upper spark plug was dark gray. The lower spark plugs from cylinder Nos. 2, 4, and 6 were not removed.

The engine was rotated by hand 350°. Cylinder Nos. 1, 3, and 5 were removed and continuity of the crankshaft and camshaft were confirmed by visual examination. No damage was noted to the valves pistons or connecting rods. The oil suction screen and the oil filter were absent of debris. The oil cooler was impact damaged.

The fuel selector handle was separated from the fuel selector valve. The carburetor was fractured and separated from the engine; disassembly revealed no damage to the float. The induction air box was crushed and the position of the carburetor heat selector was undetermined. The engine-driven fuel pump remained attached to the engine and no damage was noted.

The starter was impact-damaged and partially separated from the engine. The vacuum pump remained partially attached to the engine; the composite drive assembly and the carbon vanes were intact and the carbon rotor was fractured.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy of the pilot was performed by the Alabama Department of Forensic Sciences Medical Examiner's Office, Huntsville, Alabama. The cause of death was blunt force injuries.

Toxicology testing performed at the FAA Forensic Sciences Laboratory identified 11 mg/dL of ethanol in the liver but not in the muscle, which was consistent with postmortem production. Testing also identified 0.0458 µg/ml 11-hydroxy-delta-9-tetrahydrocannabinol (11-OH-THC), marijuana's primary active metabolite, in the liver and 0.0079 µg/ml in the lung. In addition, 0.907 µg/ml 11-nor-9-carboxy-delta-9-tetrahydrocannabinol (THC-COOH), marijuana's primary inactive metabolite, was detected in the liver and 0.0832 µg/ml in the lung; 0.0064 µg/ml delta-9-tetrahydrocannabinol (Delta 9-THC), marijuana's primary impairing psychoactive drug, was detected in the liver and 0.0458 µg/ml in the lung.

Blood was not available for toxicology testing.

Pilot Information

Certificate:	Private	**Age:**	52,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	May 30, 2017
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	638 hours (Total, all aircraft), 547.9 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N3167C
Model/Series:	R182 NO SERIES	**Aircraft Category:**	Airplane
Year of Manufacture:	1978	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	R18200247
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	September 19, 2017 Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2699.4 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-540
Registered Owner:	On file	**Rated Power:**	235 Horsepower
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:	GAD,569 ft msl	**Distance from Accident Site:**	6 Nautical Miles
Observation Time:	11:56 Local	**Direction from Accident Site:**	42°
Lowest Cloud Condition:	Few / 4000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	11 knots / 17 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	210°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.09 inches Hg	**Temperature/Dew Point:**	24°C / 16°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	GADSDEN, AL (GAD)	**Type of Flight Plan Filed:**	None
Destination:	NEW ORLEANS, LA (MSY)	**Type of Clearance:**	VFR flight following
Departure Time:		**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	33.895557,-86.161392

Administrative Information

Investigator In Charge (IIC):	Hill, Millicent
Additional Participating Persons:	John Park; FAA/FSDO; Birmingham, AL Mike Childers; Lycoming; Williamsport, PA Henry Soderlund; Textron Aviation; Wichita, KS
Original Publish Date:	December 16, 2019
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=96955