



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Deland, Florida	<b>Accident Number:</b>	ERA19FA283
<b>Date &amp; Time:</b>	September 29, 2019, 16:00 Local	<b>Registration:</b>	N731PF
<b>Aircraft:</b>	Cessna 421	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>	Loss of control in flight	<b>Injuries:</b>	3 Fatal
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

The owner of the airplane had purchased the airplane with the intent to resell it after repairs had been made. As part of that process, a mechanic hired by the owner had assessed the airplane's condition, proposed the necessary repairs to the airplane's owner, and had identified a pilot who would, once the repairs and required inspection annual inspection had been completed, fly the airplane from where it was located to where the owner resided. While the mechanic had identified a potential pilot for the relocation flight, he had not yet completed the repairs to the airplane, nor had he completed the necessary logbook entries that would have returned the airplane to service.

The pilot-rated passenger onboard the airplane for the accident flight, was the pilot who had been identified by the mechanic for the relocation flight. Review of the pilot-rated passenger's flight experience revealed that he did not possess the necessary pilot certificate rating, nor did he have the flight experience necessary to act as pilot-in-command of the complex, high-performance, pressurized, multi-engine airplane. Additionally, the owner of the airplane had not given the pilot-rated-passenger, or anyone else, permission to fly the airplane. The reason for, and the circumstances under which the pilot-rated passenger and the commercial pilot (who did hold a multi-engine rating) were flying the airplane on the accident flight could not be definitively determined, although because another passenger was onboard the airplane, it is most likely that the accident flight was personal in nature. Given the commercial pilot's previous flight experience, it is also likely that he was acting as pilot-in-command for the flight.

One witness said that he heard the airplane's engines backfiring as it flew overhead, while another witness located about 1 mile from the accident site heard the accident airplane flying overhead. The second witness said that both engines were running, but they seemed to be running at idle and that the flaps and landing gear were retracted. The witness saw the airplane roll to the left three times before descending below the tree line. As the airplane descended toward the ground, the witness heard the engines make "two pop" sounds.

The airplane impacted a wooded area about 4 miles from the departure airport, and the wreckage path through the trees was only about 75-feet long. While the witnesses described the airplane's engines backfiring or popping before the accident, the postaccident examination of the wreckage revealed no evidence of any preimpact mechanical malfunctions or failures that would have precluded normal operation. Additionally, examination of both propeller blades showed evidence of low rotational energy at impact, and that neither propeller had been feathered in flight.

Given the witness statement describing the airplane "rolling three times" before it descended from view toward the ground, it is most likely that the pilot lost control of the airplane and while maneuvering. It is also likely that the pilot's lack of any documented previous training or flight experience in the accident airplane make and model contributed to his inability to maintain control of the airplane.

Toxicology testing was performed on the pilot's chest cavity blood. The results identified 6.7 ng/ml of delta-9-tetrahydrocannabinol (THC, the active compound in marijuana) as well as 2.6 ng/ml of its active metabolite, 11-hydroxy-THC and 41.3 ng/ml of its inactive metabolite delta-9-carboxy-THC. Because the measured THC levels were from cavity blood, it was not possible to determine when the pilot last used marijuana or whether he was impaired by it at the time of the flight. As a result, it could not be determined whether effects from the pilot's use of marijuana contributed to the accident circumstances.

## Probable Cause and Findings

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

The pilot's failure to maintain control of the airplane, which resulted in a collision with terrain. Contributing was the pilot's lack of training and experience in the accident airplane make and model.

### Findings

Personnel issues	Aircraft control - Pilot
Aircraft	(general) - Not attained/maintained
Personnel issues	Total experience w/ equipment - Pilot

## Factual Information

On September 29, 2019, about 1600 eastern daylight time, a Cessna 421, N731PF, was substantially damaged when it impacted trees and terrain near DeLand Municipal Airport (DED), DeLand, Florida. The commercial pilot, pilot-rated passenger, and aft-seated passenger were fatally injured. Visual meteorological conditions prevailed at the time of the accident, and no flight plan was filed for the Title 14 *Code of Federal Regulations* Part 91 personal flight.

The owner of the airplane stated that he purchased the airplane on June 21, 2019, and that planned to make repairs and resell the airplane. The airplane was based at DED at the time of purchase and had not undergone an annual inspection for several years. The owner hired a mechanic to make the necessary repairs and conduct an annual inspection of the airplane. During the inspection, the mechanic informed the owner that the left tachometer generator and the fuel gauges were inoperative and that other items also needed repair or replacement. Once the work was done and the annual inspection was signed off, the mechanic would find a pilot to transport the airplane to Texas, where the owner resided. The mechanic subsequently found a pilot who he thought would be able to fly the airplane to Texas (the pilot-rated passenger).

The mechanic stated that he had not completed the repairs to the airplane or signed off the airplane's annual inspection at the time of the accident flight. The airplane owner stated that he did not know the pilot or the passengers and that he was not aware that the airplane was being flown at that time.

A witness in the vicinity of the accident site shortly before the accident stated that he heard the airplane fly overhead at an altitude of about 2,000 ft and described the engines as sounding "rough." About 10 minutes later, he observed the airplane overhead at an altitude of 1,000 ft and heard the engine "sputtering and backfiring."

According to another witness who was about 1-mile away from the accident site, he heard the accident airplane flying very low overhead. He then observed the airplane banking to the left and said that both engines seemed to be running at "low idle." As he continued to watch the airplane, he noticed that the flaps and landing gear were retracted. The witness also observed the airplane roll to the left three times before descending below the tree line. As the airplane descended toward the ground, the engines made "two pop" sounds. The witness saw no smoke coming from the airplane during the descent.

The airplane crashed in a heavily wooded area and a post-impact fire ensued.

The pilot, age 27, held a commercial pilot certificate with ratings for single-engine land, multiengine land, and instrument airplane. The pilot also held a flight instructor certificate with an airplane single-engine rating. His Federal Aviation Administration (FAA) first-class medical certificate was issued June 4, 2018. A review of the pilot's logbook revealed that the last entry was dated May 29, 2019. The total pilot-in-command time entered was 500 hours, including about 40 hours of multiengine airplane flight time. The logbook did not show that

the pilot had received any instruction or had logged any previous flight experience in the Cessna 421. While the pilot did have an endorsement in his logbook for the operation of high-performance airplanes, he did not have an endorsement for the operation of complex airplanes.

The pilot-rated passenger, age 32, held a private pilot certificate with a rating for airplane single-engine land. His FAA third-class medical certificate was issued on April 12, 2019. A review of his pilot logbook revealed a total of 155 flight hours, all in single-engine airplanes.

A review of the airplane's maintenance records revealed that the airplane received its last annual inspection on February 15, 2014, at a Hobbs meter time of 858 hours. The Hobbs meter reading at the time of the 2019 examination was 862 hours.

The main wreckage was located about 4 nautical miles from DED on a 230° magnetic heading. The wreckage path was about 75 ft in length from the first broken tree branch, which was about 75 ft high, to the location where the airplane came to rest at the base of a tree in an upright position. There were freshly broken branches at the wreckage site.

All flight control surfaces were located at the accident site. The cockpit section of the airplane was crushed, and a tree trunk extended from the bottom of the fuselage to the top of the right side of the cockpit. The fuselage exhibited crush damage to the aft pressure bulkhead. The empennage was broken away from the fuselage at the aft pressure bulkhead and remained partially attached by flight control cables. The vertical and horizontal stabilizers remained attached to the empennage. The vertical stabilizer was buckled, and the rudder was attached at the lower attachment points. The rudder was broken in two parts; the lower section containing the rudder trim was buckled, and the upper section was also buckled and partially attached to the remaining rudder assembly.

Examination of both engines and their components revealed no anomalies that would have prevented normal operation or production of the rated horsepower. Examination of both propellers revealed the presence of witness marks that showed contact between the blade counterweights and the propeller hub, which were consistent with the propellers being at a low pitch position (and not feathered) during impact. Additionally, the damage to the propeller hubs and their assemblies, as well as the twisting, bending, and paint scuffing observed on the propeller blades, were all consistent with relatively low rotational energy at impact.

The Office of the Medical Examiner, Daytona Beach, Florida, performed an autopsy on the pilot and pilot-rated passenger. Their cause of death was blunt force trauma.

For the pilot, toxicology testing performed at the FAA Forensic Sciences Laboratory identified in chest cavity blood samples, 6.7 ng/ml of delta-9-tetrahydrocannabinol (THC, the active compound in marijuana), 2.6 ng/ml of its active metabolite 11-hydroxy-THC, and 41.3 ng/ml of its inactive metabolite delta-9-carboxy-THC. In addition, 12.5 ng/ml of THC, 390 ng/ml of 11-hydroxy-THC, and 734.5 ng/ml of delta-9-carboxy-THC were found in urine samples. The tests were negative for carbon monoxide and ethanol.

For the pilot-rated passenger, toxicology testing performed at the FAA Forensic Sciences Laboratory was negative for carbon monoxide, ethanol, and drugs.

## History of Flight

Maneuvering	Loss of control in flight (Defining event)
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## Pilot Information

<b>Certificate:</b>	Commercial; Flight instructor	<b>Age:</b>	27, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	3-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	Airplane single-engine	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 1 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	June 4, 2018
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	(Estimated) 500 hours (Total, all aircraft), 0 hours (Total, this make and model), 185 hours (Pilot In Command, all aircraft)		

## Pilot-rated passenger Information

<b>Certificate:</b>	Private	<b>Age:</b>	32, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	3-point
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 3 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	April 12, 2019
<b>Occupational Pilot:</b>	UNK	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	(Estimated) 155 hours (Total, all aircraft)		

## Passenger Information

Certificate:	Age:	Female
Airplane Rating(s):	Seat Occupied:	Rear
Other Aircraft Rating(s):	Restraint Used:	Unknown
Instrument Rating(s):	Second Pilot Present:	Yes
Instructor Rating(s):	Toxicology Performed:	
Medical Certification:	Last FAA Medical Exam:	
Occupational Pilot: No	Last Flight Review or Equivalent:	
Flight Time:		

## Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N731PF
Model/Series:	421 Undesignat	Aircraft Category:	Airplane
Year of Manufacture:	1968	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	421-0164
Landing Gear Type:	Tricycle	Seats:	6
Date/Type of Last Inspection:	February 15, 2014 Annual	Certified Max Gross Wt.:	6841 lbs
Time Since Last Inspection:	4 Hrs	Engines:	2 Reciprocating
Airframe Total Time:	858 Hrs	Engine Manufacturer:	Continental
ELT:	C91A installed, not activated	Engine Model/Series:	GTSIO-520-D
Registered Owner:		Rated Power:	375 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:	DED,79 ft msl	Distance from Accident Site:	4 Nautical Miles
Observation Time:	15:55 Local	Direction from Accident Site:	230°
Lowest Cloud Condition:	Scattered / 3100 ft AGL	Visibility	10 miles
Lowest Ceiling:	Broken / 4800 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	7 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	60°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.07 inches Hg	Temperature/Dew Point:	29° C / 23° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Deland, FL (DED )	Type of Flight Plan Filed:	None
Destination:	Deland, FL (DED )	Type of Clearance:	VFR
Departure Time:	15:42 Local	Type of Airspace:	Class G

## Airport Information

Airport:	Deland Muni-Sidney H Taylor Fi DED	Runway Surface Type:	
Airport Elevation:	79 ft msl	Runway Surface Condition:	Unknown
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:	2 Fatal	Aircraft Fire:	On-ground
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	3 Fatal	Latitude, Longitude:	29.024444,-81.344169

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Alleyne, Eric		
<b>Additional Participating Persons:</b>	Antonia Gonzalez; FAA/FSDO; Orlando, FL Kurt Gibson; Continental Motors; Mobile, AL Casey J Love; Textron Aviation; Wichita, KS		
<b>Original Publish Date:</b>	October 20, 2021	<b>Investigation Class:</b>	3
<b>Note:</b>	The NTSB traveled to the scene of this accident.		
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=100340">https://data.nts.gov/Docket?ProjectID=100340</a>		

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](#).