Aviation Investigation Final Report

Location:	Apalachicola, Florida	**Accident Number:**	ERA19FA059
Date & Time:	November 30, 2018, 18:05 Local	**Registration:**	N3995Y
Aircraft:	Cessna 210	**Aircraft Damage:**	Destroyed
Defining Event:	Controlled flight into terr/obj (CFIT)	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot had departed on the second leg of a cross-country flight just after the end of civil twilight. Another pilot approaching the airport from the west reported seeing the airplane as it departed to the east and communicating with the pilot over the radio. Soon afterward, the other pilot observed a fireball. The wreckage was subsequently found in a remote, unlit marsh about 2 miles north of the airport. The pilot did not make any distress calls over the radio.

Examination of the wreckage and accident site indicated a high-energy, near-wings-level impact at a shallow descent angle, which was consistent with controlled flight into terrain. The landing gear was down, and the flaps were up. The wreckage examination revealed no evidence of a preaccident mechanical failure or malfunction that would have precluded normal operation of the airframe or engine.

The accident occurred at the end of civil twilight, and, because of the cloud cover, no moon would have been visible. The lack of external lighting cues as the pilot took off over an area with no lights would have been conducive to the development of spatial disorientation. The pilot likely experienced a vestibular illusion and/or spatial disorientation and allowed the airplane to descend into the marsh under controlled flight.

The pilot's diabetes was well controlled and thus not a factor in this accident. Toxicology testing revealed the pilot's use of venlafaxine, an antidepressant. The cognitive impairment associated with depression could have made the pilot more susceptible to spatial disorientation and less able to recognize the situation and respond quickly. However, given the available evidence, the investigation could not determine whether cognitive impairment related to depression contributed to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's controlled flight into terrain as a result of his spatial disorientation during departure

in dark nighttime conditions.

Findings

Personnel issues	Spatial disorientation - Pilot
Aircraft	Altitude - Not attained/maintained
Environmental issues	Dark - Contributed to outcome

Factual Information

History of Flight

Initial climb	Controlled flight into terr/obj (CFIT) (Defining event)
Post-impact	Explosion (post-impact)

On November 30, 2018, about 1805 eastern standard time, a Cessna 210D, N3995Y, was destroyed when it was involved in an accident in Apalachicola, Florida. The private pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to personnel at the Apalachicola Regional Airport (AAF) fixed-base operator, the pilot flew into the airport about 1000 on the morning of the accident, rented a car, and left the airport to conduct business in the local area. The pilot returned to the airport about 1730 to begin his preflight inspection procedures. He asked one of the linemen about local airspace restrictions to the east of the airport. The lineman responded that there were no restrictions to the east (military airspace was to the west of the airport). The pilot then proceeded to his airplane and departed to the eastabout 1800.

Another pilot was approaching AAF from the west as the accident airplane was departing. The two pilots exchanged location information over their radios. The other pilot then saw a fireball about 3 miles away at his ten-thirty o'clock position. He reported that the accident pilot had not made any distress calls over the radio. The wreckage was subsequently located in a remote marsh adjacent to the Apalachicola River about 2 miles north of AAF.

Pilot Information

Certificate:	Private	**Age:**	73,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Unknown
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	January 22, 2018
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1205 hours (Total, all aircraft)		

The pilot's total flight time was obtained from his Federal Aviation Administration (FAA) third class medical certificate application, dated January 22, 2018. A pilot logbook was recovered from the wreckage. The logbook contained four logged flights, the last two of which indicated dual instruction. The dates of the flights were not legible due to postcrash fire damage.

The flight instructor who completed the pilot's dual instruction flights reported that the flights were in

preparation for a flight review and that the most recent flight occurred on November 21, 2017. The instructor also reported he did not endorse the pilot for a flight review and that he made no other flights with the accident pilot after that date. The flight instructor provided a written record of the most recent flight, and his on November 21, 2017. The remarks of the record included missed checklist items, heading and altitude deviations, and "getting behind the airplane." The instructor also noted that the pilot needed to work on "situational awareness and multitasking."

The pilot had initially received his medical certificate in 2001, even though he reported using a social anxiety medication during his medical examination then and in 2002. The pilot again reported the use of this medication in 2005, and the FAA, during their review, revoked his medical certificate. The pilot subsequently provided information that he was no longer using any antidepressants or other psychotropic medications, and his certificate was reinstated. During the pilot's most recent FAA examination in July 2018, he was diagnosed with diabetes. The pilot did not receive a medical certificate and was referred to his primary care physician for treatment. After treatment, the pilot received a special issuance third-class medical certificate.

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N3995Y
Model/Series:	210 D	**Aircraft Category:**	Airplane
Year of Manufacture:	1964	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	21058495
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	November 8, 2018 Annual	**Certified Max Gross Wt.:**	3097 lbs
Time Since Last Inspection:	7 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	4083 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:		**Engine Model/Series:**	IO-520A(35)
Registered Owner:		**Rated Power:**	285 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The airplane and engine logbooks were not located after the accident. The airplane and engine information was obtained through records provided by a maintenance facility in Fort Myers, Florida, that the pilot used.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	KAAF,19 ft msl	**Distance from Accident Site:**	2 Nautical Miles
Observation Time:	17:53 Local	**Direction from Accident Site:**	197°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 12000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	90°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.04 inches Hg	**Temperature/Dew Point:**	18°C / 17°C
Precipitation and Obscuration:	Light - None - Rain		
Departure Point:	Apalachicola, FL (AAF)	**Type of Flight Plan Filed:**	None
Destination:	Fort Myers, FL (FMY)	**Type of Clearance:**	None
Departure Time:	18:03 Local	**Type of Airspace:**	Class G

The time of the accident correlated with the end of civil twilight.

Airport Information

Airport:	Apalachicola Regional AAF	**Runway Surface Type:**	Concrete
Airport Elevation:	19 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	06	**IFR Approach:**	None
Runway Length/Width:	5271 ft / 150 ft	**VFR Approach/Landing:**	None

AAF was located about 2 miles west of the town of Apalachicola. The town of Apalachicola was located to the south and west of the Apalachicola River. The area to the north and east of the river consisted of a large, sparsely populated area of marshland.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	1 Fatal	**Latitude, Longitude:**	29.76361,-85.022499(est)

The airplane's right wing impacted the base of a cypress tree, which was the initial impact point. Components of the airplane located near the initial impact point included right wing components, a main landing gear strut, and the propeller. The wreckage path was oriented on a heading of 100° and was about 304 ft in length. The main wreckage, located about 274 ft from the initial impact point, included the fuselage, cockpit, left wing, and empennage. Postaccident fire signatures were observed on the main wreckage. The engine was separated from the airframe and was found about 304 ft from the initial impact point.

All structural components of the airframe were accounted for at the accident site. Flight control continuity was established from the elevator and rudder to the cockpit controls. Aileron continuity was established except for tension overload fractures to the cables; the cables were still attached to the cockpit controls and the aileron attach points. The landing gear was extended at impact. The flap actuator was in the retracted (flaps up) position.

The engine was examined at the manufacturer's facility. A complete disassembly of the engine revealed no evidence of a mechanical malfunction or failure. The magnetos produced spark at all leads when operated on a test bench.

Additional Information

The FAA's *Pilot's Handbook of Aeronautical Knowledge* (FAA-H-8083-25B) states that a "false horizon" can lead to spatial disorientation. According to the handbook, "certain geometric patterns of ground lights can provide inaccurate visual information…when attempting to align the aircraft with the actual horizon. The disoriented pilot as a result may place the aircraft in a dangerous attitude."

FAA brochure AM-400-03/1, "Spatial Disorientation: Why You Shouldn't Fly by the Seat of Your Pants," explains that vestibular illusions most likely occur "under conditions with unreliable or unavailable external visual references." The brochure also states the following:

The Head-Up Illusion involves a sudden forward acceleration during level flight where the pilot perceives the illusion that the nose of the airplane is pitching up. The pilot's response to this illusion would be to push the yoke or the stick forward to pitch the nose of the aircraft down. A night take-off from a well-lit airport into a totally dark sky (black hole)…can also lead to this illusion.

Medical and Pathological Information

The State of Florida, District Two, Office of the Medical Examiner, Tallahassee, Florida, performed an autopsy of the pilot. His cause of death was multiple blunt traumatic injuries. Clinical testing demonstrated appropriately low glucose in the pilot's vitreous specimens and a postmortem hemoglobin

A1c of 5.7% (which is considered normal).

Toxicology testing performed at the FAA's Forensic Sciences Laboratory identified venlafaxine (and its metabolite desmethylvenlafaxine), alfuzosin, and loratadine (and its metabolite desloratadine) in the pilot's cavity blood and urine specimens and acetaminophen, naproxen, and famotidine in the pilot's urine specimens. No carbon monoxide or ethanol was detected in the pilot's specimens.

Venlafaxine is an antidepressant commonly marketed with the name Effexor. It has few side effects, but the underlying depression can cause various cognitive effects. Alfuzosin is used to treat symptoms from an enlarged prostate. Loratadine is a nonsedating antihistamine used to treat allergy symptoms. Acetaminophen and naproxen are over-the-counter pain and fever relievers commonly marketed as Tylenol and Aleve, respectively. Famotidine is an over-the-counter heartburn medication commonly marketed as Pepcid. Except for venlafaxine, all of these medications are not considered impairing.

The last 3 years of records from the pilot's primary care physician indicated that the pilot had depression but did not mention the pilot's mental state or the severity of any depression symptoms.

Administrative Information

Investigator In Charge (IIC):	Hicks, Ralph
Additional Participating Persons:	Scott Olson; FAA/FSDO; Tampa, FL Andrew Hall; Textron Aviation; Wichita, KS Michael Council; Continental Motors; Mobile, AL
Original Publish Date:	July 13, 2020
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98715