Aviation Investigation Final Report

Location:	Bradley, South Dakota	**Accident Number:**	CEN19FA021
Date & Time:	November 2, 2018, 11:30 Local	**Registration:**	N81KD
Aircraft:	Cessna 210	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The non-instrument-rated pilot was conducting a cross-country personal flight. Earlier on the morning of the accident, the pilot had diverted from his intended destination airport because of poor weather there. After waiting at the diversion airport for about 1.5 hours, the pilot decided to attempt the 35-mile flight to the destination airport. During taxi, the pilot called a friend to ask about weather conditions close to the destination airport, and the friend advised the pilot that "pretty low clouds" existed.

The pilot departed and remained at a low altitude until about 3 minutes before the accident, when air traffic control radar captured the airplane's altitude at 800 ft above ground level (agl). During the last minute of recorded data, the airplane made a climbing left turn of about 90° from an altitude of 1,000 to 2,100 ft agl and slowed from a groundspeed of 144 to 106 knots. A witness near the accident site heard what sounded to be an airplane climbing and descending twice, which was followed by the sound of a "loud bang." The airplane impacted terrain with a nose-down attitude at high speed, and a postcrash fire ensued. Postaccident examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

Even though the available evidence indicated that the pilot did not request a weather briefing or receive weather information from a vendor, the pilot should have known, before the start of the flight, that instrument meteorological conditions (IMC) would likely exist near his destination based on the information that his friend provided. The weather conditions at the closest official reporting station to the accident site during the time surrounding the accident indicated a 500-ft cloud ceiling and reduced visibility due to mist, and AIRMETs that were valid for the accident location and time indicated that instrument flight rules conditions existed. This information confirmed that the accident airplane was in IMC at the time of the accident.

On a previous flight, the pilot had intentionally flown into IMC conditions with the autopilot on. The pilot's decision to fly along a route with low ceilings and his subsequent entry into IMC conditions most likely resulted in the pilot becoming spatially disoriented, which led to a steep dive and ground impact.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The non-instrument-rated pilot's improper decision to conduct a flight in which instrument meteorological conditions existed along the route of flight, which resulted in spatial disorientation and a loss of airplane control.

Findings

Personnel issues	Decision making/judgment - Pilot
Personnel issues	Spatial disorientation - Pilot
Personnel issues	Aircraft control - Pilot
Aircraft	(general) - Not attained/maintained
Environmental issues	Below VFR minima - Effect on personnel

Factual Information

History of Flight

Prior to flight	Preflight or dispatch event
Enroute	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On November 2, 2018, about 1136 central daylight time, a Cessna T210N airplane, N81KD, was destroyed after impacting terrain near Bradley, South Dakota. The pilot was fatally injured. The airplane was registered to and operated by the pilot as a Title 14 *Code of Federal Regulations* Part 91 personal flight. Instrument meteorological conditions prevailed at the time of the accident, and no flight plan was filed. The flight departed about 1115 from Clark County Airport (8D7), Clark, South Dakota, and was destined for Sigurd Anderson Airport (1D7), Webster, South Dakota.

According to air traffic control data, the pilot conducted an earlier flight on the morning of the accident. The pilot departed Sioux Falls Regional Airport (FSD), Sioux Falls, South Dakota, with a planned destination of 1D7. Due to poor weather conditions at 1D7, the pilot diverted to 8D7 and landed there about 0940. 8D7 was located about 35 miles southwest of 1D7.

At 1108, while taxiing for takeoff from 8D7, the pilot called a friend to ask about weather conditions at his location, which was closer to 1D7. The pilot's friend told him that "pretty low clouds" existed at his location. During a postaccident interview, the friend reported that he expected the pilot to remain below the clouds and "scud run" from 8D7 to 1D7.

Radar data did not capture the airplane's departure from 8D7, which was consistent with the airplane flying at a low altitude. The airplane reached an altitude of 800 ft above ground level (agl) at 1132 and was midway between 8D7 and 1D7. During the last minute of data, the airplane turned left about 90°, climbed from 1,000 to 2,100 ft agl, and decelerated from a groundspeed of 144 to 106 knots. Radar data ended at 1135:05, and airplane wreckage was located less than one nautical mile from the last radar point.

A witness near the accident site heard what seemed to be the sound of an airplane climbing and descending twice, which was followed by a "loud bang." The airplane impacted terrain in a rural area in a steep nose-down angle, and a postcrash fire ensued.

Pilot Information

Certificate:	Private	**Age:**	47,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:**	April 12, 2018
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 22, 2018
Flight Time:	(Estimated) 150 hours (Total, all aircraft), 60 hours (Total, this make and model)		

The pilot held a private pilot certificate with a single-engine land rating. On April 12, 2018, the pilot received a special issuance third-class medical certificate (as a result of his obstructive sleep apnea) with a limitation to wear corrective lenses.

The pilot started flight training for his private pilot license at the end of March 2018 and completed the training in May 2018; afterward, he purchased the accident airplane. According to his flight instructor, the pilot was "conscientious" and had planned to start instrument flight training soon.

Another friend of the pilot who flew frequently with him described the accident pilot's personality as "gung-ho" and indicated that he was sometimes in a "go-go-go" mode. The pilot's friend (who was also a pilot) thought the accident pilot was "very knowledgeable" operating the accident airplane with the autopilot on but was not as skilled when hand flying the airplane. The pilot's friend reported that, during a flight in September 2018, the accident pilot climbed through a cloud deck with the autopilot on and flew in instrument meteorological conditions even though he did not have an instrument rating.

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N81KD
Model/Series:	210 N	**Aircraft Category:**	Airplane
Year of Manufacture:	1981	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	210-64484
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	January 30, 2018 Annual	**Certified Max Gross Wt.:**	3803 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3930 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	TSIO-520 SER
Registered Owner:		**Rated Power:**	310 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The airplane was manufactured in 1981 and was equipped with a Continental TSIO-520-R5A engine, serial number 522181, and a McCauley three-blade metal propeller. The airplane's last annual inspection before the accident was on January 30, 2018.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KATY,1748 ft msl	**Distance from Accident Site:**	26 Nautical Miles
Observation Time:	10:53 Local	**Direction from Accident Site:**	118°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 600 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.89 inches Hg	**Temperature/Dew Point:**	2°C / 2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Clark, SD (8D7)	**Type of Flight Plan Filed:**	None
Destination:	Webster, SD (1D7)	**Type of Clearance:**	None
Departure Time:	11:15 Local	**Type of Airspace:**	Class G

At 1053, the meteorological aerodrome report from Watertown Regional Airport (ATY), Watertown, South Dakota, located 26 miles southeast of the accident site reported wind from 060° at 6 knots, 10 miles visibility or greater, overcast ceiling at 600 ft agl, temperature 2°C, and dew point 2°C. At the

same time, Aberdeen Regional Airport (ABR), located 37 miles northwest of the accident site, reported wind calm, 4 miles visibility, mist, overcast ceiling at 500 ft agl, temperature 5°C, and dew point 4°C.

At 1153, ATY reported wind from 090° at 6 knots, 10 miles visibility or greater, scattered clouds at 600 ft agl, overcast ceiling at 1,900 ft agl, temperature 3°C, and dew point 2°C. At the same time, ABR reported wind calm, 5 miles visibility, mist, overcast ceiling at 500 ft agl, temperature 6°C, and dew point 4°C.

The closest National Weather Service Weather Surveillance Radar-1988 Doppler to the accident site was at ABR. The radar imagery indicated no precipitation targets above the accident site about the time of the accident. AIRMETs Sierra and Zulu were valid for the accident site at the accident time and during the previous flight on the morning of the accident (FSD to 8D7). The AIRMETs, which were issued at 0345 and 0945, indicated that instrument flight rules conditions existed due to mist and fog.

The pilot did not request a weather briefing through the Federal Aviation Administration (FAA) flight service contractor, and a search of archived ForeFlight information found no evidence indicating that the pilot requested or reviewed any of the company's weather information. The available evidence did not indicate if the pilot checked or received weather information from another source before or during the accident flight.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	45.108612,-97.694442

The airplane impacted terrain in a nose-down, left-wing-low attitude, and a postimpact fire consumed the cabin. The wreckage path extended about 270 ft on an easterly heading, and soot was observed on multiple pieces of the wreckage debris.

The engine was inverted near the impact crater. The six cylinders, which remained attached to the crankcase with varying degrees of impact damage, were inspected with a lighted borescope and no preimpact anomalies were noted. The crankshaft propeller flange was fractured from the crankshaft and remained attached to the propeller hub.

The propeller separated from the engine, and all three blades exhibited leading edge gouges and chordwise scratches. One blade was broken out of the hub and was bent aft from the root to the tip. The other two blades remained in the hub and exhibited S-shaped bending.

The fuel pump was disassembled; the shear shaft was intact, and no preimpact anomalies were noted. The magnetos had separated due to impact and could not be functionally tested. The fuel screen had no obstructions.

Control cable continuity was established for the aileron, rudder, elevator, and elevator trim. The instrument panel was fragmented and destroyed by postimpact fire. The pilot-side attitude indicator gyro rotor showed evidence of rotational scoring. The postaccident examinations of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

Medical and Pathological Information

The Sanford Health Pathology Clinic, Sioux Falls, South Dakota, performed an autopsy on the pilot. His cause of death was multiple blunt force injuries. Toxicology testing performed at the FAA Forensic Sciences Laboratory was negative for drugs and ethanol.

Administrative Information

Investigator In Charge (IIC):	Folkerts, Michael
Additional Participating Persons:	Greg Pire; Flight Standards District Office; Rapid City, SD Pete Basile; Textron Aviation; Wichita, KS Chris Lang; Continental Motors; Mobile, AL
Original Publish Date:	April 13, 2020
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98587