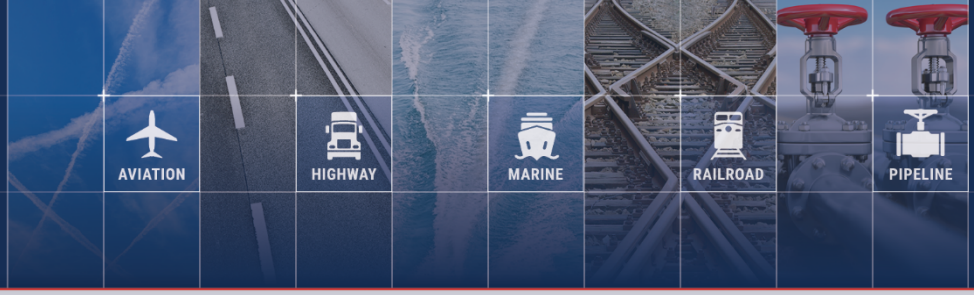

Aviation Investigation Final Report

Location:	San Marcos, Texas	**Accident Number:**	CEN13FA039
Date & Time:	November 1, 2012, 06:05 Local	**Registration:**	N10PM
Aircraft:	Cessna 320E	**Aircraft Damage:**	Substantial
Defining Event:	VFR encounter with IMC	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

A fixed-base operator employee observed the pilot preflight his twin-engine airplane and then pulled the pilot's airplane from the hangar. The employee gave the pilot directions to runway 17 but was unable to see him taxi to that location because of fog. The non-instrument-rated pilot subsequently took off in night instrument meteorological conditions with visibility less than 2 1/2 miles. The airplane crashed less than 1 mile south of the airport shortly after takeoff and witnesses saw and heard the resultant explosion. Video footage of the accident revealed that the airplane impacted the ground in a 45-degree nose-down attitude. Examination of the airplane and engines did not reveal any mechanical anomalies that would have precluded normal operation. Based on the wreckage distribution, low visibility, and the pilot's lack of an instrument rating, the accident is consistent with the pilot's loss of control due to spatial disorientation.

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 decision to takeoff in night instrument meteorological conditions, which resulted in spatial disorientation and a loss of control.

Findings

Personnel issues	Total instrument experience - Pilot
Environmental issues	Fog - Decision related to condition
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Initial climb	Loss of visual reference
Initial climb	VFR encounter with IMC (Defining event)

HISTORY OF FLIGHT

On November 1, 2012, about 0605 central daylight time, a Cessna 320E airplane, N10PM, collided with terrain shortly after takeoff from San Marcos Municipal Airport (KHYI), San Marcos, Texas. The non-instrument rated private pilot was fatally injured and the airplane was substantially damaged. The airplane was registered to and operated by a private individual and was conducted under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Night instrument meteorological conditions prevailed and no flight plan was filed. The flight was originating at the time of the accident and was destined for Theodore Roosevelt Regional Airport (KDIK), Dickinson, North Dakota.
According to an employee from the local fixed base operator (FBO), after observing the pilot preflight the accident airplane he pulled it out of a hangar and gave him directions to runway 17. The FBO employee was unable to see the airplane taxi out to the runway due to fog at the airport. Shortly after, the employee heard the airplane crash.
According to those in contact with the pilot before the accident, the pilot intended to fly from San Marcos, TX to Dickinson, ND in the same day. The locations and number of intended stops for fuel were unknown.

PERSONNEL INFORMATION

The pilot, age 66, held a private pilot certificate for airplane single-engine land and multi-engine land issued May 30, 2011. The pilot's last medical certificate held was a Class 3 special authorization with interim issuance; this medical certificate was issued on October 5, 2010, with the limitations that it was not valid for any class after October 5, 2011. On the application for the medical certificate, the pilot reported 800 total flight hours and 25 hours in the past 6 months.

A review of the pilot's airman records, on file with the Federal Aviation Administration (FAA), revealed that the pilot applied for and received a multi-engine rating for his private pilot certificate on May 30, 2011. On the application for the multi-engine rating, the pilot reported 754 hours total time, 60 hours of instruction received, 694 hours total as pilot in command (PIC), 5 hours of actual instrument time, and 100 hours of night PIC.

The pilot's current logbook was recovered for examination. A review of the logbook revealed that entries began on May 23, 2011 and revealed 39.6 hours in a multiengine airplane, 10.6

hours instruction received in a multiengine airplane, and 29 hours pilot in command in the accident airplane. The pilot's total flight time is estimated to be 783 hours and 5 hours of actual instrument time.

The pilot's previous logbooks were not recovered; therefore, the entire scope of his experience could not be determined.

AIRCRAFT INFORMATION

The accident airplane was a Cessna 320, which is a six seat, low-wing, retractable gear airplane, serial number 320E-0087, was manufactured in 1967. It was powered by two 285 horsepower Continental TSIO-520-B engines and equipped with two McCauley model 3AF32C87 LNR constant-speed propellers. Review of the maintenance records revealed that the last annual inspection on the engines, airframe, and propellers was completed on February 3, 2011. The next annual inspection should have been completed on or before February 29, 2012, however no logbook entry for that was found.

METEOROLOGICAL INFORMATION

The automated weather reporting station located at KHYI, reported at 0555 the conditions were: wind from 310 degrees at 3 knots, visibility 2 ½ miles, sky condition overcast at 400 feet, temperature 16 degrees Celsius (C), dew point 14 degrees C, and altimeter 30.04 inches of mercury. The next report for KHYI, issued at 0615, reported: wind calm, visibility ½ mile, sky condition overcast at 200 feet, temperature 17 degrees C, dew point 16 degrees C, and altimeter 30.04 inches.

On the day of the accident, civil twilight began at 0720 and official sunrise was at 0745.

There was no record of the pilot receiving a weather briefing, nor was there a record of a flight plan.

WRECKAGE AND IMPACT INFORMATION

An on-site examination was conducted on November 1, 2012. The airplane impacted the ground, to the north of a railroad track, in an open field. The accident site initiated with a short narrow ground scar. The ground scars and wreckage were consistent with the airplane impacting the ground approximately 45 degrees nose down with debris scattered over a 300 foot path along a 290-degree magnetic heading. The main wreckage was located approximately 200 feet from the initial impact point.

The main wreckage came to rest inverted, facing a 184-degree magnetic heading, and included both engines, the left wing, the empennage, the main landing gear, the top of the fuselage, and a portion of thermally damaged fuselage.

The fuselage sustained fire damage and was mostly unrecognizable. The top of the fuselage remained partially intact and separated from the wreckage.

The empennage remained attached to the fuselage remnants. The skin exhibited wrinkling, small punctures, and thermal damage where the empennage and fuselage connect.

The left wing remained attached to the fuselage remnants and included the aileron, flap, and engine nacelle.

The right wing separated from the fuselage and was located between 90 and 150 feet from the initial impact point. The separated pieces included wing skin, tip tank, aileron and flap.

The three-bladed propellers were separated from their respective engines and were located in the field near the main wreckage. The blades from the right propeller remained attached to the propeller hub. They exhibited rotational scoring and bending. The blades from the left propeller were separated from the propeller hub, exhibited rotational scoring, slight bending, gouges, and scratches to the leading edges.

The left and right engines sustained impact and fire damage. Both crankshafts had small torsional cracks near the flanges. The crankshafts were rotated from the accessory housing and continuity and compression was confirmed to both engines. The spark plugs contained soot deposits and all had normal wear signatures when compared to a Champion Aviation Service Manual AV6-R. No anomalies were found that would have precluded normal operation and production of rated horsepower from either engine.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the Central Texas Autopsy, PLLC. The pilot's cause of death was listed as multiple blunt force injuries.

The FAA Civil Aerospace Medical Institute prepared a Final Forensic Toxicology Fatal Accident Report. The results were negative for all screened substances.

ADDITIONAL INFORMATION

Train Video Evidence

The NTSB Vehicle Recorder Laboratory received a video file from a Wabtec Traintrax LDVR train mounted video recording system. The video was recorded from the camera mounted on the front of a train that passed by the accident site during the accident sequence. The Wabtec Traintrax Video records to an external hard drive in black and white format.

The train was traveling westbound at the time it recorded the aircraft accident. A review of the video revealed that the visibility in front of the train was restricted by fog, precipitation, or a

combination of the two in the vicinity of the accident location. The video quality and night lighting conditions hindered unambiguous identification of the visibility restrictions. A time lapse sequence of eight consecutive frames, about 30 seconds in time, revealed the airplane moving from left to right and was approximately 45 degrees nose down. The video revealed that the airplane impacted the ground north of the railroad tracks and the motion continued northerly along the ground. About 1.5 seconds after the last image recorded on the time lapse photograph, an explosive fire saturated the video image for about 1 second.

Engine Data Monitoring Unit

The accident airplane was equipped with a J.P Instruments 760 engine data management (EDM) unit. The NTSB Vehicle Recorder Laboratory downloaded all available information from the unit. The EDM recorded cylinder head temperatures (CHT) and exhaust gas temperatures (EGT) for each engine plus the battery voltage. The EDM was recording data every 6 seconds. The information downloaded from EDM revealed that after the engines were started, the CHTs were between 200 and 400 degrees Fahrenheit (F), the EGTs were between 1000 and 1600 degrees F, and the battery voltage was consistently reading around 26 volts.

Pilot Information

Certificate:	Private	**Age:**	66,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
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:**	October 5, 2010
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 30, 2011
Flight Time:	(Estimated) 783 hours (Total, all aircraft), 29 hours (Total, this make and model), 733 hours (Pilot In Command, all aircraft), 0 hours (Last 90 days, all aircraft), 0 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N10PM
Model/Series:	320E	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	320E-0087
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	February 3, 2011 Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	CONT MOTOR
ELT:	Not installed	**Engine Model/Series:**	TSIO-520-B
Registered Owner:	Clarence Schollmeyer	**Rated Power:**	285 Horsepower
Operator:	Clarence Schollmeyer	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Night/dark
Observation Facility, Elevation:	KHYI,594 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	05:55 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	2 miles
Lowest Ceiling:	Overcast / 400 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	310°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.04 inches Hg	**Temperature/Dew Point:**	16°C / 14°C
Precipitation and Obscuration:	Moderate - Low drifting - Fog		
Departure Point:	San Marcos, TX (KHYI)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	06:03 Local	**Type of Airspace:**	

Airport Information

Airport:	San Marcos Municipal Airport KHYI	**Runway Surface Type:**	
Airport Elevation:	600 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	1 Fatal	**Latitude, Longitude:**	29.879444,-97.883056(est)

Administrative Information

Investigator In Charge (IIC):	Lindberg, Joshua
Additional Participating Persons:	Robert Airspe; FAA; San Antonio, TX Andrew Hall; Cessna Aircraft Company; Witchita, KS Kurt Gibson; Continental Motors; Mobile, AL
Original Publish Date:	June 12, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=85483