Aviation Investigation Final Report

Location:	Silver City, Idaho	**Accident Number:**	WPR18FA276
Date & Time:	September 30, 2018, 08:37 Local	**Registration:**	N732MV
Aircraft:	Cessna T210	**Aircraft Damage:**	Destroyed
Defining Event:	Aerodynamic stall/spin	**Injuries:**	3 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot and two passengers departed on a local area flight through mountainous terrain to a nearby airport. A review of primary targets that were consistent with the airplane's flight track; initially, for a 3 minute period, the airplane was flying between 3,200 and 3,400 ft mean sea level (msl) at an average speed of 131 knots calibrated airspeed (KCAS). Radar data were lost for about the next 4 minutes due to mountainous terrain. Once the radar returns were picked up again, for about the next 4 minutes, the flight track showed the airplane continuing a southerly track, climbing from 4,700 to 6,500 ft msl. The last three radar returns showed that, during the last 36 seconds of flight, the airplane's altitude above the ground decreased as the terrain rose such that the airplane was about 150 ft above ground level at the last radar return; the airspeed decreased to less than 70 KCAS by the end of the data. The wreckage was located near the bottom of a valley about 1,950 ft west and 15.5 nm east of the wreckage. Postaccident examination of the airplane and engine revealed no evidence of any preimpact mechanical malfunctions or failures that would have precluded normal operation.

Using the approximate conditions that existed at the time of the accident, including an estimated airplane gross weight of 3,900 lbs (about 100 lbs over the airplane's maximum allowable gross weight) and flaps at 10°, the airplane's stall speed was estimated to be about 68 KCAS. A ground scar at the accident site indicated that the left wing impacted terrain first, and the wreckage lay along a heading of 345°, indicating that the pilot was likely turning the airplane during the accident sequence. Given this evidence and that the airplane was losing speed as it climbed over rising terrain near the accident site and was approaching or at its stall speed by the end of the radar data, it is likely that the pilot did not maintain adequate airspeed while making a left turn in mountainous terrain. The gusting wind and low-level wind shear conditions could also contribute to the airplane exceeding its critical angle of attack, which resulted in an aerodynamic stall with the left wing low.

Although the pilot had type 2 diabetes, the accident circumstances are not consistent with incapacitation; therefore, it is unlikely that the pilot's diabetes contributed to the accident. Toxicology testing indicated that the pilot had taken buprenorphine, which can cause somnolence and impaired decision-making, at

some point before the accident. However, based on the available information, it could not be determined whether the pilot's use of buprenorphine 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 failure to maintain adequate airspeed and his exceedance of the airplane's critical angle of attack while making a turn in gusting wind conditions while flying through hilly terrain, which resulted in an aerodynamic stall.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Airspeed - Not attained/maintained
Aircraft	Angle of attack - Capability exceeded
Environmental issues	Mountainous/hilly terrain - Effect on operation
Environmental issues	Gusts - Contributed to outcome

Factual Information

History of Flight

Maneuvering-low-alt flying	Aerodynamic stall/spin (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On September 30, 2018, about 0837 mountain daylight time, a Cessna 210M airplane, N732MV, was destroyed when it was involved in an accident near Silver City, Idaho. The pilot and the two passengers were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The flight originated from Sunrise Skypark Airport, Marsing, Idaho, about 0810 and was destined for Murphy Airport, Murphy, Idaho. The airplane did not have a discrete transponder code; therefore, primary targets from flight track data covering the area and time surrounding the accident were reviewed.

From 0824:24 to 0827:00, a target was moving to the south direction at altitudes between 3,200 and 3,400 ft mean sea level (msl) at an average ground speed of 131 knots. The target was lost at 0827:00 and reappeared at 0831:12 heading south at a position consistent with radar returns being blocked by hilly terrain. The track appeared to be following a road.

From 0831:12 to 0835:00, the returns showed the airplane continuing to move on a southerly track, climbing from about 4,700 to 6,600 ft msl. The last three radar returns showed that the airplane's altitude above the ground decreased as the terrain rose; at 0834:24, the airplane was about 825 ft above ground level, and by 0835:00 it was about 150 ft above ground level. During this time, the airspeed decreased from 90 kts calibrated airspeed (KCAS) to about 68 KCAS. The last target showed the airplane about 1,950 ft west and 15.5 nm east of the wreckage, which was found near the bottom of a valley. The emergency locator beacon activated at 0836; therefore, it is likely the accident occurred about that time.

Two witnesses located about 1 mile west of the accident site reported that they saw a white airplane flying south and that it appeared to be flying along a north-south oriented ditch or dry river bed and that they then saw it cross over an east-west oriented hill. Shortly after, they saw a plume of smoke on the other side of the hill.

Pilot Information

Certificate:	Private	**Age:**	73,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	BasicMed	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	4560 hours (Total, all aircraft), 4416 hours (Pilot In Command, all aircraft), 32 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft)		

At the time of the pilot's last medical examination, he reported having type 2 diabetes, high blood pressure, high cholesterol, and hypothyroidism. He was issued a special issuance, third-class medical certificate with the limitation that he must have glasses available for near vision and that stated, "Not valid for any class after 12/31/2017. Not valid outside the borders of the United States." The pilot completed the BasicMed educational course and obtained a BasicMed physician attestation in December 2017.

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N732MV
Model/Series:	T210 M	**Aircraft Category:**	Airplane
Year of Manufacture:	1976	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	21061628
Landing Gear Type:	Tricycle	**Seats:**	6
Date/Type of Last Inspection:	August 13, 2018 Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	Reciprocating
Airframe Total Time:	6801.1 Hrs as of last inspection	**Engine Manufacturer:**	Teledyne Continental
ELT:	C126 installed, activated, aided in locating accident	**Engine Model/Series:**	TSIO-520-R
Registered Owner:		**Rated Power:**	300 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

The airplane's weight and balance were calculated based on the airplane's empty weight and the pilot's and two passenger's reported weights. The airplane's gross weight at the time of the accident was estimated to be about 3,900 lbs, which was about 100 lbs over its maximum allowable gross weight. The calculations also showed that the airplane had a more forward center of gravity.

The airplane's Pilot's Operating Handbook provides stall speeds at the airplane's maximum gross weight. For an airplane operating at the maximum gross weight and with a forward center of gravity, the airplane's stall speed with 10° of flaps was 68 KCAS at 0° bank; 73 KCAS at 30° of bank; and 96 KCAS at 60° of bank.

equated to about 100 lbs over the maximum gross weight of the airplane, 3,800 lbs, with a more forward center of gravity. The detailed computations are appended to this report.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KMAN,2537 ft msl	**Distance from Accident Site:**	32 Nautical Miles
Observation Time:	14:35 Local	**Direction from Accident Site:**	20°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	90°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.85 inches Hg	**Temperature/Dew Point:**	13°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Marsing, ID (ID40)	**Type of Flight Plan Filed:**	None
Destination:	Murphy, ID (1U3)	**Type of Clearance:**	None
Departure Time:	08:10 Local	**Type of Airspace:**	Class G

A friend of the pilot was notified of the accident shortly after it occurred and flew out to the accident location. He reported that, while maneuvering about 1 mile east of the accident site at 6,500 ft msl, his onboard weather system displayed that the wind was from the southwest at 38 knots. A High-Resolution Rapid Refresh model for 0900 in the area surrounding the accident indicated a surface wind from 245° at 15 knots. The wind speed increased to 25 knots by 5,700 ft msl and the wind speed remained between 25 and 35 knots from 5,700 through 14,000 ft msl. The model indicated a chance of light-to-moderate, low-level wind shear in between the surface and 6,000 ft msl. A chance of light-to-moderate, clear air turbulence existed in several layers between the surface and 12,500 ft msl.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	2 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	Unknown
Total Injuries:	3 Fatal	**Latitude, Longitude:**	43.075279,-116.77111(est)

The wreckage was located at 6,655 ft msl near the bottom of a north-south oriented valley. The mountains to the immediate east peaked about 6,975 ft msl and those to the south about 6,800 ft msl. The wreckage debris field from the initial impact point to the last found piece of wreckage was about 379 ft extending from south to north. The first identified point of contact with terrain consisted of ground scars and a fragment of the left-wing red navigation light lens, consistent with the tip of the left-wing impacting terrain first. The wreckage lay along a heading of 345°.

The fuel selector was found in the right tank position. The landing gear were found in the up position. The flap actuator was measured to be about 1.8 inches (10° of flaps). Elevator continuity was established from the control columns to the bellcrank, which connected to the elevator arm assembly. The elevator trim was neutral. The aileron returns and right aileron direct cable exhibited tension overload separations in the cabin. All other cables, turnbuckles, and bellcranks remained intact.

Examination of the engine revealed that the case exhibited impact damage. All six cylinders remained attached to the engine crankcase. The propeller, right magneto, alternator, vacuum pump, and throttle and metering assembly were separated from the engine. The cylinders were examined using a borescope, and no anomalies were noted. The engine crankshaft was manually rotated at the engine-driven fuel pump, which exhibited extensive thermal and impact damage. Rotational continuity was established throughout the engine and valve train. Thumb compression and suction were obtained on all six cylinders. The drive was rotated by hand, and no binding was noted. No spark was observed from the primary ignition leads when rotated. The distributor cap was removed, and all the internal components were thermally destroyed. All the spark plugs exhibited normal wear.

The drive coupling remained intact, but it could not be manually rotated. The fuel pump was disassembled, and it exhibited extensive thermal damage. The turbocharger was manually rotated, and it exhibited rotational scoring.

Two of the propeller blades had separated from the hub. All three propeller blades exhibited chordwise scratches. Two of the blades exhibited S-type bending. The blade that remained in the propeller hub exhibited forward bending.

Medical and Pathological Information

An autopsy was performed by the Owyhee County Coroner's Office, Marsing, Idaho. The cause of death was blunt force trauma. The examination was limited by the extent of injury, but no significant natural disease was identified.

Toxicology testing performed by the Federal Aviation Administration's Bioaeronautical Science Laboratory did not detect any tested-for substances in muscle. Further testing detected quinine and loratadine in liver tissue but no buprenorphine. However, the liver was significantly thermally damaged.

Toxicology testing performed on specimens from the pilot by NMS Labs detected caffeine; quinine; loratadine and its metabolite descarboethoxloratidine, which is a nonsedating over-the-counter medication for heartburn and colds; and buprenorphine (11 ng/gm) and its metabolite norbuprenorphine (22 ng/gm). Buprenorphine, which is a controlled substance, is used to treat severe pain. Buprenorphine carries a warning from the Federal Drug Administration that it "may impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery)." Further, opiates cause, in part, sedation, alterations in cognitive and sensory efficiency, respiratory depression, nausea, vomiting, headache, and sleep and concentration disorders.

Administrative Information

Investigator In Charge (IIC):	Vanover, Jackie		
Additional Participating Persons:	Robert Nance; FAA; Boise, ID Henry J Soderlund; Textron Aviation; Wichita, KS Kurt Gibson; Continental Motors Group; Mobile, AL		
Original Publish Date:	May 5, 2021	**Investigation Class:**	2
Note:	The NTSB traveled to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98369		

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.