Aviation Investigation Final Report

Location:	Trapper Creek, Alaska	**Accident Number:**	ANC15FA050
Date & Time:	July 19, 2015, 19:15 Local	**Registration:**	N734VB
Aircraft:	Cessna U206G	**Aircraft Damage:**	Destroyed
Defining Event:	Low altitude operation/event	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was performing a series of low passes over a group of people at an outdoor wedding reception party. Witnesses observed the airplane fly over the party at near tree-top level traveling between 100 and120 knots. The airplane made two successful passes over the group, and, on the third pass, the airplane entered a right turn and initiated a climb just before impacting the top of a spruce tree. The climb continued briefly before the airplane rolled inverted and descended through the trees to ground impact.

Postaccident examination of the airframe and engine revealed no mechanical malfunctions or anomalies that would have precluded normal operation. Toxicology testing identified likely impairing levels of tetrahydrocannabinol (THC) and low levels of diazepam in the pilot's blood. However, diazepam and THC levels are known to change after death and may be elevated due to movement of the drugs out of storage sites into blood. Therefore, it was not possible to determine if the pilot was impaired from the effects of THC and/or diazepam at the time of 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 clearance from trees while intentionally maneuvering close to the ground.

Findings

Personnel issues	Decision making/judgment - Pilot
Personnel issues	Monitoring environment - Pilot

Factual Information

History of Flight

Maneuvering-low-alt flying	Low altitude operation/event (Defining event)
Maneuvering-low-alt flying	Collision with terr/obj (non-CFIT)

On July 19, 2015, about 1915 Alaska daylight time, a Cessna U206G airplane, N734VB, was destroyed after it impacted tree and tundra-covered terrain, following a loss of control while maneuvering at low altitude near Trapper Creek, Alaska. The airplane was being operated by the pilot as a visual flight rules (VFR) local flight under the provisions of Title 14, Code of Federal Regulations (CFR) Part 91, when the accident occurred. The solo commercial pilot was fatally injured. Visual meteorological conditions prevailed, and no flight plan had been filed. The flight departed a private airstrip near Curry Ridge, Alaska.

The pilot was performing a series of low passes over an outdoor wedding reception party when the accident occurred.

During an on-scene interview with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) on July 20, a witness reported that while attending the outdoor wedding reception party, he observed the accident airplane fly over the wedding reception party at near tree-top level, traveling between 100-120 knots. He said that the airplane made two successful passes over the group of guests, and on the third pass, the airplane entered a right turn prior to impacting the top of a spruce tree with the main landing gear. The witness noted that after the airplane struck the treetop, he was unable see the airplane descend into the tree and tundra-covered terrain.

During a telephone conversation with the NTSB IIC on July 22, a second witness reported that he observed the airplane descend over the wedding reception party at near treetop level. He stated that the airplane initiated a climb just before impacting the top of a spruce tree, and the climb continued for about 5 to 6 seconds, before the airplane rolled inverted and subsequently disappeared into the trees.

Pilot Information

Certificate:	Commercial	**Age:**	54,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
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 Without waivers/limitations	**Last FAA Medical Exam:**	January 3, 2013
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	2100 hours (Total, all aircraft)		

The pilot, age 54, held a commercial pilot certificate with an airplane mutli-engine land, single-engine land rating and instrument airplane. Additionally, he held a flight engineer certificate for a turbo-propeller powered airplane. His most recent third-class medical was issued on January 3, 2013 with no limitations.

No personal flight records were located for the pilot, and the aeronautical experience listed on page 3 of this report was obtained from a review of the airmen Federal Aviation Administration (FAA) records on file in the Airman and Medical Records Center located in Oklahoma City. On the pilot's application for medical certificate, dated January 3, 2013 he indicated that his total aeronautical experience was about 2,100 hours, of which 400 were in the previous 6 months.

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N734VB
Model/Series:	U206G	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	U20604875
Landing Gear Type:	Tricycle	**Seats:**	6
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental Motors
ELT:	C91A installed, not activated	**Engine Model/Series:**	520 Series
Registered Owner:		**Rated Power:**	300
Operator:		**Operating Certificate(s) Held:**	None

The six-seat, high-wing, tricycle gear airplane, Cessna U206G, serial number U206048785, was manufactured in 1979. It was powered by a Continental Motors IO-520 series.

No airframe or engine logbooks were discovered for examination. Total time for the engine and airframe are unknown.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PATK,358 ft msl	**Distance from Accident Site:**	6 Nautical Miles
Observation Time:	02:53 Local	**Direction from Accident Site:**	90°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	310°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.12 inches Hg	**Temperature/Dew Point:**	22°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Trapper Creek, AK	**Type of Flight Plan Filed:**	None
Destination:	Trapper Creek, AK	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

The closest weather reporting facility is Talkeetna Airport, Talkeetna, AK approximately 6 miles east of the accident site. At 1853, an aviation routine weather report (METAR) at Talkeetna, Alaska, reported in part: wind 310 degrees at 3 knots, visibility, 10 statute miles, clear skies; 71 degrees F; dew point 41 degrees F; altimeter, 30.13 inHG.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	62.32722,-150.26889(est)

The NTSB IIC, along with a Federal Aviation Administration (FAA) safety inspector from Denali Certificate Management Office (CMO), reached the accident site on the morning of July 20.

All of the airplane's major components were found at the main wreckage site. The wreckage was located in an area of densely populated birch and spruce trees, on its right side at an elevation of about 436 feet mean sea level (MSL). Portions of the fragmented airplane were scattered along a debris path oriented along a magnetic heading of 260 degrees, which measured about 110 feet in length. (All headings/

bearings noted in this report are magnetic).

An area believed to be the initial impact site was marked by a broken treetop, atop an estimated 40-foot tall birch tree. The initial ground scar was discernable by disturbed vegetation. Small wreckage fragments were found near the initial ground scar. The distance between the initial impact point and the initial ground scar was about 65 feet.

The cockpit area separated forward of the main landing gear box and was extensively damaged. The throttle was found in the idle position. The mixture and propeller control were found in the full-forward position.

The airplane's right wing separated from its forward attach point; remained attached at its rear attach point, but separated about 6 inches inboard of the fuselage structure. A large elliptical impact area was present about ¾ span outboard of the wing with extensive accordion style, leading edge crushing from the elliptical impact area outboard to the tip. The outboard portion of the right wing separated near the elliptical impact area. The wing's flight control surfaces remained attached to their respective attach points but sustained impact damage.

The airplane's left wing separated from its attach points, and fragmented into three major sections. An elliptical impact area was present approximately ¾ span outboard of the wing with extensive accordion style, leading edge crushing from the elliptical impact area outboard to the tip. The wing's flight control surfaces remained attached to their respective attach points, and were relatively undamaged.

The aft fuselage and empennage exhibited extensive accordion style crushing. The vertical stabilizer and rudder remained attached to the empennage, and were relatively free of impact damage.

The left horizontal stabilizer remained attached to the empennage, but exhibited spanwise downward bending about ¾ span outboard to the tip. The left elevator remained attached to its inboard attach point but separated at its outboard attach point, and was fracture about mid-span.

The right horizontal stabilizer sustained impact damage, but remained attached to the empennage. The right elevator remained attached to its respective attach points, and was relatively free of impact damage.

The engine separated from its engine mounts, came to rest inverted and sustained impact damage to the front and underside. The exhaust tube had malleable bending and folding, producing sharp creases that were not cracked or broken along the creases.

The propeller and hub remained attached to the engine crankshaft. All three of the propeller blades remained attached to the propeller hub assembly and exhibited aft bending. One of the three propeller blades exhibited slight torsional "S" twisting, and the propeller tip separated from the blade.

All the primary flight controls were identified at the accident site. Elevator control continuity was established from the control column to the aft elevator bellcrank. Rudder control continuity was established from the rudder torque tube to the rudder bellcrank. Aileron control continuity could not be established at the accident site due to numerous fractures in the system, but all fractures exhibited

features consistent with tension overload.

The wreckage was examined at a private residence, Trapper Creek, AK, on July 22, 2015. In attendance for the examination was the NTSB IIC, along with an air safety investigator from Textron Aviation.

After the wreckage was recovered, aileron control continuity was established in the direct cables, from the control column to the point where the cables fractured with features consistent with tension overload, to the left and right aileron bellcranks. The balance cable remained attached to the right aileron bellcrank, but separated from the left aileron bellcrank and fractured with features consistent with tension overload. The length of the balance cable was consistent with the required length to reach the left aileron bellcrank.

The examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

Additional Information

Federal Aviation Regulations

The accident flight was operated under the provisions of Part 91 as a personal flight, and was subject to the part's applicable rules. Section 91.119, states, in part: No person may operate an aircraft below the following altitudes: over any congested area of a city, town, or settlement, or over any open air assembly of persons, at an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.

Medical and Pathological Information

A post mortem examination was conducted under the authority of the Alaska State Medical Examiner, Anchorage, Alaska, on July 20, 2015. The pilot's cause of death was determined to be multiple blunt force injuries. Additionally, the autopsy identified severe coronary artery disease in all vessels with maximal narrowing of 75 to 85% in the distal right coronary artery; there was no gross evidence of any scarring of the heart muscle. However, the investigation was unable to determine if pilot impairment or incapacitation resulting from the symptoms from coronary artery disease contributed to the probable cause of the accident.

The FAA Bioaeronautical Laboratory identified diazepam (0.057 ug/ml) and its active metabolite nordiazepam (0.04 ug/ml) in the pilot's blood. Nordiazepam and other active diazepam metabolites, oxazepam and temazepam, were detected in urine. Additionally, tetrahydrocannabinol was detected in blood (0.0028 ug/ml) and its inactive metabolite tetrahydrocannabinol carboxylic acid was detected in blood (0.0096 ug/ml) and urine (0.1487 ug/ml).

Diazepam (marketed under the trade name Valium) is a prescription medication used to relieve anxiety, muscle spasms, seizures, and to control agitation caused by alcohol withdrawal. Diazepam may cause

reduced concentration, impaired speech patterns and content, and amnesia; some of its effects may last for days. The drug carries a warning about engaging in hazardous occupations requiring complete mental alertness such as driving a motor vehicle when using diazepam. Therapeutic blood concentrations typically range from 0.1-1.0 ug/ml.

Tetrahydrocannabinol (THC) is the psychoactive compound found in marijuana with therapeutic levels as low as 0.001 ug/ml. THC has mood altering effects including euphoria, relaxed inhibitions, sense of well-being, disorientation, image distortion, and psychosis. The ability to concentrate and maintain attention is decreased during marijuana use, and impairment of hand-eye coordination is dose-related over a wide range of dosages. Impairment in retention time and tracking, subjective sleepiness, distortion of time and distance, vigilance, and loss of coordination in divided attention tasks have all been reported. Users may be able to "pull themselves together" to concentrate on simple tasks for brief periods of time. Significant performance impairments are usually observed for at least one to two hours following marijuana use, and residual effects have been reported up to 24 hours.

Diazepam and THC levels are prone to change after death and may be elevated due to movement of the drug out of storage sites into blood. Therefore, although toxicology testing identified likely impairing levels of THC (0.0028 ug/ml) and low levels of diazepam in the pilot's cavity blood after the accident, the investigation was unable to determine if the pilot was impaired from the effects THC or the combined effects of THC and diazepam at or around the time of the accident.

A copy of the NTSB's Medical Officer's Factual Report is available in the public docket for this accident.

Tests and Research

Engine

On July 22, 2015, an engine examination was performed by the NTSB IIC. No anomalies, contamination, or evidence of malfunction was found in any of the engine accessories. The cylinders, pistons, valve train, crankshaft, and other internal components were all without evidence of anomaly or malfunction.

Both magnetos were removed from the engine and the coupling was rotated by hand. When the coupling was rotated, blue spark was observed on the top ignition leads.

Administrative Information

Investigator In Charge (IIC):	Banning, David
Additional Participating Persons:	Patrick Sullivan; Federal Aviation Administration; Anchorage, AK Andrew L Hall; Textron Aviation; Wichita, KS Kurt Gibson; Continental Motors Inc.; Mobile, AL
Original Publish Date:	March 14, 2016
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=91592