Aviation Investigation Final Report

Location:	Big Lake, Alaska	**Accident Number:**	ANC14FA062
Date & Time:	August 10, 2014, 02:17 Local	**Registration:**	N5158P
Aircraft:	Piper PA-24-250	**Aircraft Damage:**	Substantial
Defining Event:	Unknown or undetermined	**Injuries:**	1 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The passenger reported that, before departing for the short personal flight to the private pilot's residence, she and the pilot went to dinner and then a local bar. They then departed, and she remembered hitting something like a "bump" while the airplane was on approach to the destination airport, but she could not recall anything else about the accident sequence due to her injuries. Dark night conditions prevailed at the time of the accident. The passenger reported no mechanical problems with the airplane, and the pilot did not mention any mechanical problems during the flight.

The airplane wreckage was found alongside a road adjacent to the destination airport. An area believed to be the initial impact site had two broken 40-ft-high treetops located about 50 ft south of the extended runway centerline and 830 ft from the runway threshold. A postaccident examination of the airframe and engine revealed no mechanical malfunctions or anomalies that would have precluded normal operation.

Toxicological testing detected levels of ethanol in the pilot's blood equivalent to a 0.192 percent blood alcohol concentration, which is 4.5 times greater than the regulatory limit for pilots. Slightly higher alcohol levels were detected in the pilot's vitreous samples, which is consistent with his recent ingestion of sufficient alcohol to cause impairment. Therefore, the pilot's impairment led to his inability to safety operate the airplane, and he failed to maintain clearance from trees during the approach to the airport.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's impairment due to alcohol consumption, which resulted in his failure to maintain clearance from trees.

Findings

Personnel issues	Alcohol - Pilot
Personnel issues	Monitoring environment - Pilot
Aircraft	Altitude - Not attained/maintained
Environmental issues	Tree(s) - Awareness of condition

Factual Information

History of Flight

Approach-VFR go-around	Unknown or undetermined (Defining event)
Approach-VFR pattern final	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On August 10, 2014, about 0217 Alaska daylight time, a Piper PA-24-250 airplane, N5158P, sustained substantial damage during an in-flight collision with trees and terrain while attempting to land on Runway 7 at the Big Lake Airport, Big Lake, Alaska. The airplane was being operated by the pilot as a visual flight rules (VFR) local flight under the provisions of 14 Code of Federal Regulations (CFR) Part 91 when the accident occurred. The private pilot was fatally injured, and the sole passenger sustained serious injuries. Dark night, visual meteorological conditions prevailed, and no flight plan had been filed. The flight departed Merrill Field Airport, Anchorage, Alaska, about 0202.

The pilot had been in Anchorage for a social visit, and was returning home to Big Lake when the accident occurred.

During a telephone conversation with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) on August 15, 2014 the passenger stated that the pilot had picked her up sometime after 2100 on August 9th, they went to dinner and then to a local bar. They had departed Anchorage and were flying to Big Lake to the pilot's house. She stated that there were no mechanical problems with the airplane and that the pilot did not mention any concerns over the course of the flight. She remembered hitting something like a "bump", but could not recall the accident sequence.

According to witnesses, the accident pilot and his passenger were seen at local bar in Anchorage, during the early morning hours of August 10. Various bar patrons reported that both the accident pilot, and his female passenger, left the bar about 0119 on August 10. Archived surveillance video, which was provided to the NTSB, confirmed the witness's accounts.

A review and forensic analysis of archived Federal Aviation Administration (FAA) radar data revealed that, on August 10, about 0202, an unidentified aircraft, believed to be the accident airplane, departed from the Merrill Field Airport. After departure, the radar track proceeded north, towards the Big Lake Airport. As the track approached the Big Lake Airport, it turned west, and appeared to pass over the airport. After passing over the airport in a westerly direction, the track turns 180 degrees back to the airport. The track subsequently disappeared about the time of the accident. A copy of the radar flight track map overlay is included in the public docket for this accident.

PERSONNEL INFORMATION

The pilot, age 50, held a private pilot certificate with an airplane mutli-engine land and single-engine land ratings. His most recent third-class medical was issued on March 18, 2011, with the limitation that he must wear corrective lenses for distant and possess glasses for near.

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 March 18, 2011 he indicated that his total aeronautical experience was about 2,500 hours, of which none were in the previous 6 months.

AIRCRAFT INFORMATION

The four-seat, low-wing, retractable, tricycle gear airplane, Piper PA-24-250, serial number 24-174, was manufactured in 1958. It was powered by a Lycoming O-540-A4C5 engine.

No airframe or engine logbooks were discovered for examination. Total time for the engine and airframe are unknown. No evidence of the required annual inspection was discovered.

METEROLOGICAL INFORMATION

The closest weather reporting facility is Wasilla Airport, Wasilla, AK, about 9 miles east of the accident site. At 0236, an aviation routine weather report (METAR) was reporting wind 060 degrees at 5 knots, visibility, 10 statute miles, overcast clouds 10,000 feet; 57 degrees F; dew point 43 degrees F; altimeter, 29.63 inHG.

AIRPORT INFORMATION

The Big Lake Airport is a public airport in Class "E" airspace, located 1 mile southeast of Big Lake, Alaska, at an estimated elevation of 158 feet. At the time of the accident, the airport had one gravel surface runway (7/25) that was 2450 feet long by 70 feet wide, equipped with medium intensity runway lights (MIRL).

The runway safety area dimensions are 2800-feet long by 100-feet wide. Runway 7 has a 20:1 obstacle clearance surface, beginning at the runway threshold and extending outward and upward at a rate of 20-feet horizontal for each 1-foot vertical. A tree line located about 840-feet from Runway 7 threshold and 30-feet right of runway centerline penetrates the 20:1 obstacle clearance surface by about 14-feet.

WRECKAGE AND IMPACT INFORMATION

The NTSB IIC along with another NTSB investigator reached the accident site on the morning of August 10.

All of the airplanes major components were found at the main wreckage site. The wreckage was located in an area of gravel-covered terrain alongside a road adjacent to the Big Lake airport, at an elevation of about 158 feet mean sea level. The nose of the airplane was on approximately a 250 degree heading (All headings/ bearings noted in this report are magnetic).

An area believed to be the initial impact site was marked by two broken treetops, atop 40-foot tall birch trees, located about 50 feet south of the extended runway centerline and 830 feet from the threshold of runway 7. The initial ground scar was discernable by disturbed gravel and 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 135 feet.

The cockpit area was extensively damaged. The engine and firewall were displaced upward and aft, and the instrument panel was displaced upward. The throttle was found in the mid-range position. The mixture and propeller control was in the near full-forward position. The carburetor heat was in the on position. The ignition switch was in the "both" position and the landing gear selector was in the down position.

The fuselage separated from the empennage at the production joint near the trailing edge of the wings.

The empennage was intact and relatively free of impact damage. The left stabilator remained attached to the empennage, and exhibited spanwise upward bending about mid-span outboard to the tip. The right stabilator remained attached to the empennage and was relatively free of impact damage.

The vertical stabilizer and rudder remained attached to the empennage and were relatively free of impact damage.

The airplane's right wing separated from its forward attached point, but remained attached to its rear attach point. An elliptical impact area was present approximately ¾ span of the wing with extensive accordion style, leading edge aft crushing present from the elliptical impact area outboard to the tip. The wing's flight control surfaces remained attached to their respective attach points.

The airplane's left wing remained attached to its attach points, and exhibited spanwise upward bending approximately ¾ span outboard to the tip. The wing's flight control surfaces remained attached to their respective attach points.

The airplanes main landing gear was in the extended position.

The engine assembly remained attached to the engine firewall and had 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. Two of the three propeller blades remained attached to the propeller hub assembly and exhibited extensive leading edge gouges, substantial torsional "S" twisting and chordwise scratching. The third propeller blade separated at the propeller hub, the tip separated from the blade, and the blade exhibited slight leading edge gouges and chordwise scratching.

Due to impact damage, control continuity could not be established at the accident site.

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

The wreckage was examined at the hanger of Alaska Claims Services, Wasilla, Alaska, on November 19, 2014. In attendance for the examination was the NTSB IIC, along with two other NTSB investigators, and an air safety investigator from Lycoming engines.

After the wreckage was recovered, aileron control continuity was established from the control column to the point where the cables were cut for recovery, to the left and right aileron bellcranks, and in the balance cable to the point where the cables were cut for recovery, to the left and right bellcranks. Elevator control continuity was established from the upper and lower arm elevator bellcranks, to the control column. Rudder control continuity was established from the forward rudder pedals, to the aft rudder bellcrank.

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

MEDICAL AND PATHOLOGICAL INFORMATION

A post mortem examination was conducted by the Alaska State Medical Examiner, Anchorage, Alaska, on August 11, 2014. The cause of death for the pilot was attributed to multiple brain and brainstem injuries and the manner of death was accident. Additionally, the autopsy identified an enlarged, 700-gram heart with coronary artery disease including a maximum of 70% stenosis in the right coronary artery. It did not identify focal lesions in the heart muscle.

FAA Bioaeronautical Research Laboratory toxicology analysis identified ethanol in peripheral blood (0.192 gm/dl) and vitreous (0.228 g/dl) [equivalent to a 0.192 percent blood alcohol concentration], and methanol in amounts too low to quantify in peripheral blood and vitreous. Sildenafil, its metabolite desmethylsildenafil, and zolpidem were detected in urine and blood (zolpidem at 0.002 ug/ml in both urine and blood).

Ethanol is the intoxicant commonly found in beer, wine, and liquor. It is also produced after death by microbial activity but the vitreous and urine are less susceptible to this production. Ethanol is a central nervous system depressant. After ingestion, at low doses, it impairs judgment, psychomotor functioning, and vigilance; at higher doses, it can cause coma and death. The effects of ethanol on aviators are generally well understood; it significantly impairs pilots' performance, even at very low levels. As a result, Federal Aviation Regulations, Section 91.17 (a) prohibits any person from acting or attempting to act as a crewmember of a civil aircraft while having 0.040 gm/dl or more ethanol in the blood. Methanol is an alcohol that may be produced at low levels along with ethanol during fermentation but may also be formed in the body after death by microbial activity. Like ethanol the vitreous and urine are less prone to postmortem methanol production.

Sildenafil is a prescription medication used to treat erectile dysfunction marketed as Viagra. Zolpidem is a prescription medication used as a short acting sleep aid and marketed as Ambien. It carries the warning - may impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery). Its therapeutic range is 0.0250 to 0.300 ug/ml.

A copy of the NTSB's medical officer's factual report is available in the public docket for this accident.

SURVIVAL ASPECTS

The airplane was equipped with two front seats that travel fore and aft on floor mounted seat tracks. The front seat lap belts were attached to the frame of each seat. The front seats were equipped with shoulder belts that are attached to the upper door post on the right side and upper window post on the left side, and are integrated into the lap belt when clipped to the seat belt buckle.

First responders reported that the pilot had fastened his lap belt, but the shoulder harness was not clipped into the seat belt buckle.

TESTS AND RESEARCH

Global Positioning System (GPS)

At the time of the accident, the pilot was using a Garmin Aera series portable global positioning system (GPS) receiver, capable of storing route-of-flight data. The unit was sent to the NTSB's Vehicle Recorders Division for examination.

A NTSB electrical engineer was able to extract the GPS data for the accident flight, which included, in part, time, latitude, longitude, and GPS altitude. Groundspeed and course information were derived from the extracted parameters.

The GPS data logs for August 10, 2014, revealed the accident flight departed MRI about 0202. After departure, the airplane proceeded north before it turned west, toward the Big Lake airport, and made a straight-in approach to runway 25. As the airplane passed over the threshold of runway 25, the airplane began to climb, and it continued west for about 1 mile before making a 180- degree left turn in the direction of runway 7.

A flight track map overlay, and tabular data corresponding to the accident flight are available in the public docket for this accident.

Engine

On October 24, 2014, an engine examination was performed by Lycoming Engines, under the supervision of the NTSB. 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.

Pilot Information

Certificate:	Private	**Age:**	50
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
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:**	March 18, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	2500 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N5158P
Model/Series:	PA-24-250	**Aircraft Category:**	Airplane
Year of Manufacture:	1958	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	24-174
Landing Gear Type:	Retractable - Tricycle	**Seats:**	
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:		**Engine Model/Series:**	O-540
Registered Owner:	Christopher Cyphers	**Rated Power:**	250 Horsepower
Operator:	Christopher Cyphers	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night/dark
Observation Facility, Elevation:	PAWS,353 ft msl	**Distance from Accident Site:**	9 Nautical Miles
Observation Time:		**Direction from Accident Site:**	73°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 10000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	29.62 inches Hg	**Temperature/Dew Point:**	14°C / 6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Anchorage, AK (PAMR)	**Type of Flight Plan Filed:**	None
Destination:	Big Lake, AK (PAGQ)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Airport Information

Airport:	Big Lake Airport PAGQ	**Runway Surface Type:**	Gravel
Airport Elevation:	158 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	07	**IFR Approach:**	None
Runway Length/Width:	2435 ft / 70 ft	**VFR Approach/Landing:**	Full stop;Go around

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 1 Serious	**Latitude, Longitude:**	61.32389,-149.490005(est)

Administrative Information

Investigator In Charge (IIC):	Banning, David
Additional Participating Persons:	Marcus Roulet; Federal Aviation Administration; Anchorage, AK Mark Platt; Lycoming Charles Little; Piper Aircraft Inc.
Original Publish Date:	June 9, 2016
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=89832