Aviation Investigation Final Report

Location:	Fairbanks, Alaska	**Accident Number:**	ANC12FA066
Date & Time:	July 18, 2012, 16:46 Local	**Registration:**	N432LT
Aircraft:	Piper PA-32R-301	**Aircraft Damage:**	Destroyed
Defining Event:	VFR encounter with IMC	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The noninstrument-rated pilot and one passenger were flying as part of a group of three airplanes on a sightseeing tour. The accident airplane and one of the other airplanes in the group encountered deteriorating weather and made an unplanned stop at an airport along their route of flight. After receiving fuel and updated enroute weather, both pilots decided to depart for their original destination.

During the second attempt to fly to the destination airport, the two airplanes again encountered deteriorating weather conditions. The pilot of the accident airplane decided to maintain visual flight rules, and the pilot of the other airplane requested an instrument flight rules clearance to the destination airport. A short time later, the pilot of the accident airplane contacted air traffic control and stated that he was having difficulty maintaining visual conditions and subsequently requested an instrument clearance. The pilot reported climbing through 6,800 feet for 7,000 feet, then no further communications were received. The wreckage was located on a brush- and tundra-covered hillside; the left wing had separated from the airplane inflight, followed by the separation of other airplane components before impact.

Given the reported weather, the pilot's lack of an instrument rating, his request for an instrument clearance, the wreckage path, and the lack of any mechanical anomalies, it is likely that the pilot encountered instrument meteorological conditions and became spatially disoriented while attempting to climb to a higher altitude. It is also likely that the pilot then lost control of the airplane, and entered a steep spiraling dive from which he was unable to recover. During the dive, the aerodynamic forces increased to the point that the left wing separated from the airplane, which tightened the spiral, and led to the in-flight structural failure of other sections of the airplane.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The noninstrument-rated pilot's decision to continue visual flight into instrument meteorological conditions likely leading to spatial disorientation, which resulted in a loss of

airplane control and in-flight structural failure.

Findings

Personnel issues	Decision making/judgment - Pilot
Personnel issues	Aircraft control - Pilot
Personnel issues	Spatial disorientation - Pilot
Personnel issues	Qualification/certification - Pilot
Aircraft	Directional control - Not attained/maintained
Environmental issues	Below VFR minima - Contributed to outcome

Factual Information

History of Flight

Enroute-cruise	VFR encounter with IMC (Defining event)
Enroute-cruise	Loss of control in flight
Enroute-cruise	Aircraft structural failure
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On July 18, 2012, about 1646 Alaska daylight time, a Piper PA-32R-301 airplane, N432LT, was destroyed after an uncontrolled descent and collision with terrain about 43 miles north of Fairbanks, Alaska. The non-instrument rated private pilot and one passenger were fatally injured. The airplane was registered to LNP Saratoga Inc., Palo Alto, California, and operated by West Valley Flying Club, Palo Alto. The airplane was being operated as a 14 CFR Part 91 visual flight rules (VFR) cross-country personal flight when the accident occurred. At the time of the accident, instrument meteorological conditions were reported in the area of the accident. Visual meteorological conditions prevailed at the airplane's point of departure. The accident flight originated at the Fort Yukon Airport, Fort Yukon, Alaska, about 1600, en route to Fairbanks, the flight's final destination for the day.

According to the leader of the group the accident pilot was flying with, the accident airplane was the third of three airplanes that were touring northern Canada and Alaska. On the day of the accident, the group was scheduled to fly from Inuvik, Northwest Territories, Canada, to Fairbanks. The first airplane in the group flew to Fairbanks uneventfully. The other two airplanes encountered deteriorating weather conditions while en route to Fairbanks, which required an unscheduled stop in Fort Yukon to refuel. There are no longer fueling services at Fort Yukon; however, the group was able to obtain fuel from a local operator to continue the flight. After departing Fort Yukon, the two airplanes again encountered marginal weather conditions. The pilot of one of the two airplanes requested, and received an instrument flight rules (IFR) clearance to Fairbanks. The accident airplane continued VFR, and the accident pilot reported to the pilot of the other airplane that he had found "a good VFR track."

About 1641, the accident pilot contacted the Anchorage Air Route Traffic Control Center (ARTCC) specialist on duty, requesting an IFR clearance direct to Fairbanks. The approach controller instructed the pilot to climb to 7,000 feet, and issued a clearance direct to Fairbanks. About 1645, the ARTCC lost radio and radar contact with the accident airplane. No further communications were received from the accident airplane, and the airplane did not arrive at Fairbanks. It was officially reported overdue at 1719.

After being notified of an overdue airplane, search and rescue personnel from the Civil Air Patrol (CAP) began a search for the missing airplane near its last known location, close to an area known as the White Mountains. About 1948, the crew of the CAP airplane located the airplane's wreckage in an area of mountainous, tundra-covered terrain. Rescue personnel aboard an Air National Guard HH-60G helicopter reached the site later that night. A Pararescue Jumper (PJ) was lowered to the accident site, and confirmed that the airplane's occupants were deceased.

Pilot Information

Certificate:	Private	**Age:**	64,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):		**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	July 29, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	September 17, 2011
Flight Time:	804 hours (Total, all aircraft)		

The pilot, age 63, held a private pilot certificate for airplane single-engine land issued by the Federal Aviation Administration (FAA) on July 13, 2009. The pilot was an Australian national, and his private pilot certificate was valid only when accompanied by his Australian pilot license, which was valid for airplane single-engine, tail-wheel, manual propeller pitch control, and retractable undercarriage. He held a valid Australian Class 2 medical certificate, issued May 16, 2012, with a limitation that reading correction must be available while exercising the privileges of this license.

No personal flight records were located for the pilot, but on his rental agreement application to the West Valley Flying Club, dated March 12, 2012, he indicated a total flight time of 804 hours.

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N432LT
Model/Series:	PA-32R-301	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	3213099
Landing Gear Type:	Retractable - Tricycle	**Seats:**	7
Date/Type of Last Inspection:	June 26, 2012 100 hour	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3243 Hrs as of last inspection	**Engine Manufacturer:**	LYCOMING
ELT:	C91A installed, not activated	**Engine Model/Series:**	IO-540 SER
Registered Owner:	LNP SARATOGA INC	**Rated Power:**	300 Horsepower
Operator:	West Valley Flying Club	**Operating Certificate(s) Held:**	None

The six-seat, low-wing, retractable-gear airplane, serial number 3213099, was manufactured in 1995. It was powered by a Lycoming IO-540-K1G5 300-hp engine, and equipped with a Hartzell model HC-I3YR-1RF/F7663DR constant-speed propeller.

At the last 100-hour inspection, completed on June 26, 2012, the airplane had had total time in service of 3,243 hours. An engine overhaul was completed on February 19, 2004, at an airplane total time of 2,132.7 hours.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PAFA	**Distance from Accident Site:**	43 Nautical Miles
Observation Time:	16:53 Local	**Direction from Accident Site:**	180°
Lowest Cloud Condition:	Few / 1700 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 7000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	190°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	14°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Fort Yukon, AK (PFYU)	**Type of Flight Plan Filed:**	None
Destination:	Fairbanks, AK (PAFA)	**Type of Clearance:**	IFR;VFR flight following
Departure Time:		**Type of Airspace:**	

A National Transportation Safety Board (NTSB) meteorologist did a comprehensive study of the weather conditions along the airplane's route of flight. The synoptic or large scale migratory weather systems influencing the area were documented using standard National Weather Service (NWS) charts issued by the National Center for Environmental Prediction (NCEP) located in Camp Springs, Maryland. These are the base products used in describing weather features and in the creation of forecasts and warnings. Reference to these charts can be found in the joint NWS and Federal Aviation Administration (FAA) Advisory Circular "Aviation Weather Services", AC 00-45.

The NWS Surface Analysis Chart for 1600 ADT July 18, 2012 (0000Z on July 19, 2012) depicted a low pressure system at 1007-hectopascals (hPa) over the Gulf of Alaska with an associated occluded frontal system and a secondary trough of low pressure extending into southern Alaska over the Kenai Peninsula to the south of the accident site. Over northwestern Alaska a stationary front was located over the Northern and Interior Seward Peninsula impacting the Nome area. A high pressure ridge extended over southwestern Alaska. A col or neutral point between the low and high pressure areas extended over the accident site. (A copy of the full Meteorology Report is included in the public docket for this accident.)

The station models for the Fairbanks area depicted calm wind, sky overcast, a temperature of 58 degrees Fahrenheit (F), a dew point temperature of 44 degrees F, sea level pressure of 1015.5-hPa, with a falling pressure tendency. The station model immediately northwest of Fairbanks indicated a south-southwest wind at approximately 5 knots, light continuous rain, overcast clouds, with a temperature of 50° F and dew point of 49° F.

Fairbanks International Airport (PAFA) was located approximately 43 miles south of the accident at an

elevation of 439 feet. The airport had an Automated Surface Observation System (ASOS) and was augmented by a NWS certified observer. The airport lists a magnetic variation of 19° east, and reported the following conditions at the approximate time of the accident:

Fairbanks weather observation at 1653 ADT, wind from 190° at 3 knots, visibility unrestricted at 10 statute miles, a few clouds at 1,700 feet above ground level (agl), scattered clouds at 4,500 feet, and overcast at 7,000 feet, temperature 14° C, dew point 8° C, altimeter 29.95 inches of mercury. Remarks: automated observation system, sea level pressure 1014.6-hPa, temperature 13.9° C, dew point 7.8° C.

Rain was reported intermittently at Fairbanks between 1851 through 1142 on July 19, 2012 (0251Z-1942Z) with MVFR and IFR conditions during this period. (See meteorology report for the raw observations.)

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	65.453887,-147.556106(est)

Continuous poor weather conditions prevented the NTSB investigator-in-charge (IIC), along with an additional NTSB air safety investigator, and a Federal Aviation Administration operations inspector from the Fairbanks Flight Standards District Office (FSDO) from reaching the site until July 20.

The aircraft impacted on a brush and tundra-covered hillside in the foothills of the White Mountains, at an elevation of approximately 1,600 feet mean sea level. Portions of the fragmented airplane wreckage were scattered along a debris path oriented along a magnetic heading of 330 degrees, and measured about one-quarter mile in length.

The left wing separated from the airplane, and was found mostly intact. The aileron had separated from the attach points, and was located later by recovery personnel. The fuel cap was missing from the left wing, and was later found in Fort Yukon. It was determined that the missing fuel cap was not a factor in the accident.

The vertical stabilizer was found with the rudder attached.

The left horizontal stabilator separated from the airplane, and was found relatively undamaged in the wreckage path.

The right horizontal stabilator was not located during the initial on scene investigation, but was later found by recovery personnel.

The fuselage, engine, and right wing were located at the main wreckage site. All were extensively damaged by a postcrash fire.

All indications showed that the wings and horizontal stabilator failed under positive loads.

The engine and propeller were partially buried and received extensive thermal damage. On scene examination showed that one blade of the propeller separated at the hub, and showed slight S-bending, tip gouging, and a small portion of the tip was broken off. The other two blades showed slight aft bending, and showed no signs of gouging or rotational scoring.

Communications

At 1408, the pilot contacted the Fairbanks Flight Service Station (FFS), and stated that he and one other pilot in his group were unable to make it to Fairbanks due to weather, and they were landing at the Fort Yukon Airport. The pilot received an updated weather briefing, and informed the FSS that they would file another flight plan if they were able to depart for Fairbanks.

Radio recordings from the Anchorage Air Route Traffic Control Center (ARTCC) revealed that at 15:58:03, the pilot contacted Anchorage ARTCC stating that he had just departed Ft. Yukon, direct to Fairbanks and was "squawking 1155." At 13:58:51, ARTCC radar identified the airplane 10 miles south of the Ft. Yukon VOR. The pilot requested 5,000 feet as a final altitude, and ARTCC instructed the pilot to maintain VFR, and expect advisories.

At 16:05:28, the ARTCC controller switches with another controller, and during the handoff he states that, "weather is IFR."

At 16:14:48, ARTCC advises the pilot that if voice is lost, change to frequency 120.9 in 10 minutes, and the pilot confirms.

At 16:25:45 ARTCC advised that radar contact was lost.

At 16:26:35 ARTCC advised the pilot that the Fairbanks altimeter setting was 29.96 inHg.

At 16:30:48, another aircraft relays to ARTCC that there are two aircraft trying to contact Fairbanks approach control. The relaying airplane says that one airplane is heading north. At 16:33:02 the accident airplane relays that he is "out in the open now, good VFR flying."

At 16:37:05, the pilot relayed through another aircraft that he was requesting an IFR clearance to Fairbanks, and that his altitude was 2,800 feet with "reasonable VFR," but at 16:37:50, when asked if he could maintain his own terrain and obstruction clearance to 8,000 feet, the pilot said he could not maintain VFR to 8,000 feet and that he had "good VFR coming up," so he declined the IFR clearance and said he would remain VFR.

At 16:38:04, the pilot of the other airplane in the group contacted ARTCC and requested an IFR

clearance to Fairbanks. At 16:39:56, ATRCC asked the pilot if he was still in contact with N432LT, and the pilot responded that he was not in contact with him.

At 16:41:00, ARTCC regained radar and voice contact with the accident airplane, and the pilot stated that he was "through 4,300 [feet]." At 16:41:29 the pilot stated to the controller that he required "IFR assistance." At 16:41:45, the pilot was issued an IFR clearance and was instructed to climb to 7,000 feet. AT 16:43:18 ARTCC requested that the pilot report reaching 7,000 feet, and the pilot responded stating that he was climbing through 6,800 feet for 7,000 feet.

At 1643:28, ARTCC requested the airplane's equipment suffix, and the response of "Golf, Lima Tango" was given by the pilot of the accompanying airplane.

No further communications were received. Radar contact with the airplane was lost at 16:44:55.

Medical and Pathological Information

A postmortem examination was conducted under the authority of the Alaska State Medical Examiner, Anchorage, Alaska, on July 20, 2012. The cause of death for the pilot was attributed to blunt force and thermal injuries.

The FAA's Civil Aeromedical Institute performed toxicological examinations for the pilot on September 28, 2012, which was negative for alcohol and drugs. The toxicological examination revealed 10 mg/dl of Ethanol was detected in the muscle, which was attributed to sources other than ingestion.

Tests and Research

The wreckage was examined at the hangar of Alaska Claims Services, Wasilla, AK, on August 15, 2012. In attendance for the examination was the NTSB IIC, and investigators from Piper Aircraft Company.

Control Continuity

The rudder cables were attached at the rudder pedals, and at the control surface. The horizontal stabilator cables were attached at the cockpit and control surface. The aileron cables were attached at the cockpit controls and attached to the bell cranks in both wings.

Horizontal Stabilator

The left and right sections of the horizontal stabilator failed under positive loads. The signatures were consistent with the stabilator twisting as it separated from the empennage.

The trim jack screw showed 16 threads, which corresponds to full nose up trim.

The stop bolts appeared normal.

Vertical Stabilizer

The vertical stabilizer separated from the empennage at the rear attach bracket. The rudder remained attached at the top hinge. The rudder horn assembly remained attached, and both arms were bent. The stop bolts appeared normal.

Left Wing

The left wing separated from the airplane at the wing root under positive load. The left aileron separated during the accident sequence, although signatures on the control stops did not indicate a flutter event. The left aileron separated and tore at the outboard hinge point. The outboard 16 inches of aileron were not located. The aileron push rod fractured in overload.

There was wing buckling on the top and bottom of the wing, 5 feet inboard of the tip. The loads appeared positive on the stringers on the top of the wing, and negative on the stringers on the bottom of the wing.

Right Wing

The inboard section of the right wing was severely damaged from postcrash fire. The aileron was still attached. The right flap separated at impact. The spar had positive load signatures, and a slight "S" bend in the spar, consistent with the wing "unloading" after the separation of the left wing.

Engine/Fuel Selector

There was extensive thermal damage to the engine. The bottom of the engine case was melted. The engine crankshaft appeared intact.

The fuel selector valve was found, but thermal damage prevented the determination of its position at the time of the accident.

Fuselage

The fuselage had extensive thermal damage. No cockpit switch positions could be determined.

Propeller

The propeller remained attached to the engine. One blade was fractured at the shank, just outboard of the hub. The tip was broken off. There was leading edge gouging, slight "S" bending, and chordwise scratches.

The other two blades remained in the hub, and both were bent slightly aft.

The spinner was crushed upward and aft from the hub of the fractured blade.

Fuel

The fuel system consists of two interconnected tanks in each wing, having a combined capacity of 53.5 U.S. gallons per wing, for a total capacity of 107 U.S. gallons, of which 102 gallons are useable. Fuel consumption calculations completed by the NTSB IIC showed that approximate total fuel burn for the flight from Inuvik to Fairbanks was estimated at 46 gallons. Given that the airplane was properly fueled in Inuvik, the airplane would have had sufficient fuel to accomplish the flight.

The left wing fuel tank cap was not located with the airplane wreckage, and was later found on the ramp at Fort Yukon. On-scene examination of the left wing revealed no evidence fuel siphoning, fuel staining, or leaking from the open left fuel tank filler port.

Administrative Information

Investigator In Charge (IIC):	Shaver, Christopher
Additional Participating Persons:	Jim Watson; Fairbanks FSDO; Fairbanks, AK Charles Little; Piper Aircraft, Inc.; Vero Beach, FL
Original Publish Date:	December 5, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=84216