National Transportation Safety Board
Aviation Accident Final Report

Location:	Petersburg, AK	**Accident Number:**	ANC13FA054
Date & Time:	06/04/2013, 1531 AKD	**Registration:**	N616W
Aircraft:	DEHAVILLAND BEAVER DHC-2 MK.1	**Aircraft Damage:**	Substantial
Defining Event:	Abrupt maneuver	**Injuries:**	1 Fatal, 2 Serious, 4 Minor
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled - Sightseeing		

Analysis

The pilot reported that the accident flight was his fourth flight and the third tour flight of the day in a float-equipped airplane. The weather had deteriorated throughout the day with lowering ceilings, light rain, and fog on the mountain ridges. The pilot said that when approaching a mountain pass, he initiated a climb by adding a “little bit” of flap (about 1 pump of the flap handle actuator) but did not adjust the engine power from the cruise power setting. He noted his airspeed at 80 knots, with a 200-feet-per-minute climb on the vertical speed indicator. He was having difficulty seeing over the cowling due to the nose-high attitude, when he suddenly noticed trees in his flight path. He initiated an immediate left turn; the airplane stalled, and began to drop, impacting the mountainous, tree-covered terrain.

A passenger reported that the weather conditions at the time of the accident consisted of tufts of low clouds, and good visibility. They did not enter the clouds at any time during the flight. He reported that the airplane made a left turn, stalled, and then made a sharp left turn right before impact. The airplane seemed to be operating fine, and he heard no unusual sounds, other than the engine speed seemed to increase significantly right before impact.

The pilot reported that there were no preaccident mechanical anomalies that would have precluded normal operation, and the postaccident examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

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 altitude above the trees, and his subsequent failure to maintain adequate airspeed while maneuvering to avoid the trees, which resulted in an inadvertent aerodynamic stall/spin and an uncontrolled descent.

Findings

Aircraft	Airspeed - Not attained/maintained (Cause)
Personnel issues	Aircraft control - Pilot (Cause)
Environmental issues	Mountainous/hilly terrain - Contributed to outcome

Factual Information

HISTORY OF FLIGHT

On June 4, 2013, about 1531 Alaska daylight time, a float-equipped de Havilland DHC-2 (Beaver) airplane, N616W, sustained substantial damage when it collided with mountainous, tree-covered terrain, about 14 miles east of Petersburg, Alaska. The airplane was being operated by Pacific Wings LLC, as a visual flight rules (VFR) sightseeing flight under the provisions of 14 Code of Federal Regulations, Part 135, when the accident occurred. Of the seven people on board, the certificated airline transport pilot and three passengers sustained minor injuries, two passengers sustained serious injuries, and one passenger was fatally injured. Visual meteorological conditions prevailed, and company flight following procedures were in effect. The flight originated at the Lloyd R. Roundtree Seaplane Facility, at the Petersburg Harbor, Petersburg, about 1519.

The flight was a sightseeing flight for cruise ship passengers, and the passengers cruise ship was docked in Petersburg.

As part of their company flight following procedures, Pacific Wings incorporates Spidertracks, which provides company management personnel with a real-time, moving map display of the airplane's progress.

During an interview with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) on June 6, the operator's director of operations reported that after returning from a flight, he was alerted that the flight track for the accident airplane had stopped transmitting along the anticipated route to LeConte Glacier. Inquiring of the company flight follower, and unable to establish radio contact with the pilot, he initiated a search for the missing airplane. He said the 45 minute tour flight had a standard route, but pilots were allowed to alter that route based on weather conditions.

About 1547, approximately 16 minutes after the accident, the United States Coast Guard (USCG) Alaska received a 406 Mhz emergency locator transmitter (ELT) signal assigned to the accident airplane. At approximately 1614, after being notified of an overdue airplane, and after learning about reports of an emergency locator transmitter (ELT) signal along the accident pilot's anticipated flight route, search and rescue personnel from the U.S. Coast Guard Air Station Sitka, began a search for the missing airplane.

About 1816, the crew of a U.S. Coast Guard HH-60 helicopter located the airplane's wreckage in an area of mountainous, tree-covered terrain. A rescue swimmer was lowered to the accident site and discovered that one of the airplane's occupants died at the scene, and six others had survived the crash. The six survivors were hoisted aboard the HH-60 helicopter, and then transported to Petersburg.

During an interview with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) on June 6, the pilot stated that the accident flight was his fourth flight of the day, and his third tour flight that day. He said that weather conditions had deteriorated throughout the day with a ceiling of approximately 2,000 feet, light rain, and fog along the mountain ridges. He had departed from the Petersburg harbor en route to LeConte Glacier, via Horn Cliffs. He reported that while approaching a mountain pass, en route to LeConte Glacier he initiated a climb by adding a "little bit" of flap, approximately 1 pump of the flap handle actuator, but did not adjust the engine power from the cruise power setting. He noted his

airspeed at 80 knots, with a 200 feet per minute climb on the vertical speed indicator. He was having difficulty seeing over the cowling due to the nose high attitude as he entered the pass, when he noticed trees in his flight path. He initiated an immediate left hand turn; the airplane stalled, and began to drop, impacting the mountainous terrain. The pilot stated that there were no preaccident mechanical anomalies that would have precluded normal operation.

During a telephone conversation with the NTSB IIC, on June 7 a passenger reported that they received a preflight safety briefing when they boarded the airplane. After departure they headed out across the water towards LeConte Glacier. He said that the airplane made a left turn, stalled, and then made a sharp left turn right before impact. He said that the weather conditions at the time of the accident consisted of tufts of low clouds, and good visibility. They did not enter the clouds at any time during the flight. He stated that the airplane seemed to be operating fine, and he heard no unusual sounds, other than the engine speed seemed to increase significantly just before impact.

PERSONNEL INFORMATION

The pilot, age 39, held an airline transport pilot certificate with an airplane muilti-engine land rating, and commercial privileges for single-engine land and single-engine sea. He also held a type rating for a Hawker Siddeley HS-125 airplane. His most recent first class medical certificate was issued on April 24, 2013, with the limitation not valid for any class after October 24, 2013.

According to the Pilot/Operator Aircraft Accident Report, (NTSB Form 6120.1) submitted by the operator, his total aeronautical experience was about 4,841 flight hours, of which about 1,465 were in same make and model as the accident airplane. In the preceding 90 and 30 days prior to the accident, the pilot flew a total of 114.1 and 45.7 flight hours.

His most recent CFR Part 135.293 check ride was on February 5, 2013. A Federal Aviation Administration (FAA) operations inspector from the Juneau Flight Standards District Office (FSDO) administered the check ride in an amphibious float-equipped Cessna 185 airplane.

AIRCRAFT INFORMATION

The airplane was a 1958 model year, de Havilland DHC-2 MK1 (Beaver). At the time of the accident the airplane had a total time in service of 34,909.3 flight hours. A review of the maintenance records revealed that the most recent annual inspection of the airframe and engine was on January 22, 2013, 76.1 flight hours before the accident.

The airplane was equipped with a Pratt and Whitney R-985 radial engine that was rated at 450 horsepower.The engine was overhauled 1,015.6 hours before the accident.

The airplane was equipped with Edo 4930 floats.

According to the performance information section of the airplane's FAA approved flight manual, the stall speed for a DHC-2 airplane configured with the flaps in the up position, operating at 5,057 pounds (the estimated gross weight of the airplane at the time of the accident), ranges between 60 and 105 miles per hour, depending on bank angle.

METEOROLOGICAL INFORMATION

The closest weather reporting facility was Petersburg Airport, approximately 14 miles west of the accident site. At 1536, an aviation routine weather report (METAR) at Petersburg, Alaska, reported wind, calm, visibility, 2 1/2 statute miles with light rain and mist, scattered clouds at

500 feet, broken clouds at 1,300 feet, overcast clouds at 1,800 feet, temperature, 52 degrees F; dewpoint 48 degrees F; altimeter, 30.03 inHG.

WRECKAGE AND IMPACT INFORMATION

Assisted by the United States Coast Guard, and two volunteers from Juneau Mountain Rescue, the NTSB IIC, along with an Alaska State Trooper, reached the accident site on the afternoon of June 5.

The on-scene examination revealed that the airplane impacted in a near vertical attitude, on a tree covered 37 degree slope, at an elevation of about 912 feet mean sea level. The nose of the airplane was on approximately a 30 degree heading, and uphill (All headings/ bearings noted in this report are magnetic). The average heights of the trees surrounding the accident site were in excess of 200 feet tall.

All of the airplanes major components were found at the main wreckage site.

An area believed to be the initial impact point was marked by a broken treetop approximately 80 feet from the main wreckage site. Approximately 4 feet of the outboard section of the right wing was found at the base of the tree.

The airplane's right wing separated into 3 sections, with the largest section remaining attached to the aft wing attach point, but separating from the forward wing attach point. Extensive spanwise leading edge aft crushing was present. The wing's flight control surfaces separated from their respective attach points.

The airplane's severed left wing was suspended in the tall trees almost directly above the main wreckage site, and exhibited spanwise leading edge aft crushing, with multiple elliptical impact areas. The wing's flight control surfaces remained attached to their respective attach points. The left wing lift strut remained attached to the wing, but separated at the fuselage.

The airplane impacted on its nose and the tips of both floats. The tips of both floats showed impact damage, and the float support structure collapsed.

Extensive impact damage was evident to the airplane's firewall and right side of the cockpit area. The forward right-hand door remained attached to its attach points, but the door post and forward fuselage exhibited crushing damage.

The empennage was bent to the right, approximately 90 degrees just forward of the horizontal stabilizer. The left horizontal stabilizer exhibited leading edge aft crushing with two elliptical impact areas. The right horizontal stabilizer was relatively undamaged.

The left elevator separated at the outboard attach point but remained attached at the inboard attach point. The right elevator remained attached to its respective attach points.

The cowling was crushed upwards and aft.

The engine assembly separated from 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 exhibited extensive bending and torsional "S" twisting. The third propeller blade exhibited extensive leading edge gouges, substantial torsional "S" twisting 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.

History of Flight

Enroute-cruise	Abrupt maneuver (Defining event) Loss of control in flight Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Airline Transport; Commercial	**Age:**	39
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without Waivers/Limitations	**Last FAA Medical Exam:**	04/24/2013
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	02/05/2013
Flight Time:	4841 hours (Total, all aircraft), 1465 hours (Total, this make and model), 3971 hours (Pilot In Command, all aircraft), 114 hours (Last 90 days, all aircraft), 46 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	DEHAVILLAND	**Registration:**	N616W
Model/Series:	BEAVER DHC-2 MK.1	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	1290
Landing Gear Type:	Float	**Seats:**	8
Date/Type of Last Inspection:	01/22/2013, Annual	**Certified Max Gross Wt.:**	5371 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	34909 Hours at time of accident	**Engine Manufacturer:**	P&W
ELT:	C126 installed, activated, aided in locating accident	**Engine Model/Series:**	R-985 SERIES
Registered Owner:	SUNRISE AVIATION INC	**Rated Power:**	450 hp
Operator:	Pacific Wings LLC	**Operating Certificate(s) Held:**	On-demand Air Taxi (135)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	PAPG, 113 ft msl	**Distance from Accident Site:**	12 Nautical Miles
Observation Time:	1536 AKD	**Direction from Accident Site:**	270°
Lowest Cloud Condition:	Scattered / 500 ft agl	**Visibility**	2 Miles
Lowest Ceiling:	Broken	**Visibility (RVR):**	
Wind Speed/Gusts:	Calm /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.03 inches Hg	**Temperature/Dew Point:**	11°C / 9°C
Precipitation and Obscuration:	Light - Rain; Mist		
Departure Point:	Petersburg, AK	**Type of Flight Plan Filed:**	Company VFR
Destination:	Petersburg, AK	**Type of Clearance:**	None
Departure Time:	1519 AKD	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Fatal, 2 Serious, 3 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 2 Serious, 4 Minor	**Latitude, Longitude:**	56.784722, -132.568056 (est)

Administrative Information

Investigator In Charge (IIC):	David B Banning	**Report Date:**	06/02/2014
Additional Participating Persons:	Jon Percy; Federal Aviation Administration; Juneau, AK Tyler Robinson; Pacific Wings LLC		
Publish Date:	06/02/2014		
Investigation Docket:	http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=87091		

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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.