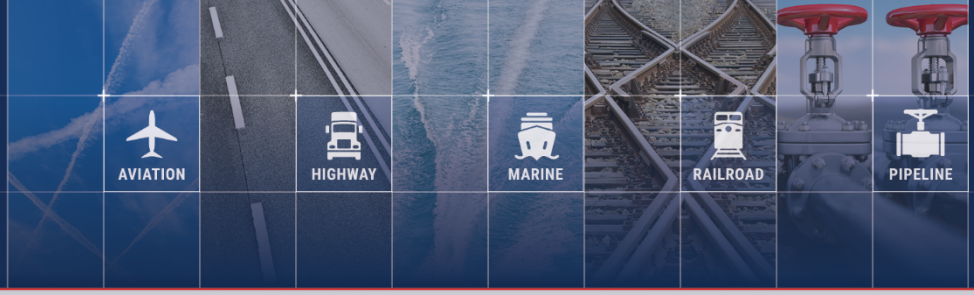

Aviation Investigation Final Report

Location:	Ketchikan, Alaska	**Accident Number:**	ANC19LA028
Date & Time:	June 27, 2019, 09:45 Local	**Registration:**	N94DC
Aircraft:	De Havilland DHC-2	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control on ground	**Injuries:**	5 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Scheduled		

Analysis

According to the pilot, upon touchdown in the float-equipped airplane, the seaplane skipped, and the right float dug into the water. A video recorded by a cruise ship passenger captured the accident sequence and revealed that the airplane was landing parallel to an ocean swell and touched down in a relatively flat pitch attitude. After touchdown and encountering the swell, the airplane veered to the left, water looped, nosed down, and began to submerge. The airplane sustained substantial damage to the left wing, left lift strut, and fuselage. The pilot reported that there were no preaccident mechanical malfunctions or anomalies 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:

A loss of directional control while landing, which resulted in a water loop.

Findings

Personnel issues	Aircraft control - Pilot
Environmental issues	(general) - Effect on equipment
Aircraft	Directional control - Not attained/maintained

Factual Information

History of Flight

Landing-flare/touchdown	Loss of control on ground (Defining event)
Landing-landing roll	Collision with terr/obj (non-CFIT)
Landing-landing roll	Nose over/nose down

On June 27, 2019, at about 0945 Alaska daylight time, a float-equipped, de Havilland DHC-2 (Beaver) airplane, N94DC, sustained substantial damage following a loss of control during landing at the Ketchikan Harbor Seaplane Base (5KE) Ketchikan, Alaska. The airline transport pilot and four passengers were not injured. The airplane was registered to V2 Aviation LLC, and operated by Pacific Airways, under the provisions of 14 *Code of Federal Regulations* Part 135. Visual meteorological conditions prevailed and company flight following procedures were in effect. The flight departed the dock at Ketchikan International Airport (PAKT) at 0941 destined for 5KE.

According to the pilot, after providing the passengers with a preflight safety briefing, he departed the PAKT airport dock for the short repositioning flight to the company's harbor side dock. After departure, he flew the standard west route, turned back overhead the airport dock, and then turned inside of Pennock Island for final approach to the harbor. Upon touchdown, the airplane skipped, and the right float dug into the water. The airplane water looped, nosed down and began to submerge. After all motion had ceased, he secured the magnetos, assisted the passengers with their life vests and evacuation, and then evacuated the airplane himself. A Good Samaritan fishing boat responded to the scene and assisted with the rescue of the airplane's occupants. The pilot reported that there were no preaccident mechanical malfunctions or anomalies that would have precluded normal operation.

A video recorded by a cruise ship passenger captured the accident sequence and revealed that the airplane was landing parallel to an ocean swell and touched down in a relatively flat pitch attitude. After touchdown and encountering the swell, the airplane veered to the left, water looped, nosed down and began to submerge.

Water Flying Concepts, Second Edition, by Dr. Dale De Remer is an advance text on wilderness water flying and states in part:

The seaplane is very directionally stable as long as it is landed so that its center of gravity is forward of its center of rotation. The seaplane center of rotation in the air is its center of gravity, and on the water it is the center of the wetted side area of the float(s). This is difficult to visualize, as it changes with the speed and attitude of the aircraft on the water. It can be considered to be close to the center of buoyancy. The main thing to remember is to keep the center of rotation aft of the center of gravity. Keep the center of rotation aft, period, until the aircraft has slowed and settled off the step.

In the recommendation section of the NTSB Accident/Incident Reporting Form 6120.1, the operator recommended the following three changes to their operations:

1. More extensive training for new pilots on aborted and glassy water landings.
2. No longer allowing first year pilots to execute short approaches into the harbor.
3. Aircraft to refuel at the harbor, prior to passengers boarding at PAKT airport dock for their flights.

The closest weather reporting facility is Ketchikan International Airport (PAKT), Ketchikan, Alaska. At 0953, a METAR from PAKT was reporting in part: wind, 320° at 5 knots; visibility, 10 statute miles; sky condition, clear; temperature, 70° F; dew point 57° F; and an altimeter setting of 29.93 inches of mercury.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	**Age:**	45,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Glider	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	January 22, 2019
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	May 11, 2019
Flight Time:	3775 hours (Total, all aircraft), 132 hours (Total, this make and model), 3545 hours (Pilot In Command, all aircraft), 132 hours (Last 90 days, all aircraft), 72 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	De Havilland	**Registration:**	N94DC
Model/Series:	DHC-2	**Aircraft Category:**	Airplane
Year of Manufacture:	1951	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	238
Landing Gear Type:	Float	**Seats:**	7
Date/Type of Last Inspection:	June 20, 2019 100 hour	**Certified Max Gross Wt.:**	5090 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	19674 Hrs at time of accident	**Engine Manufacturer:**	Pratt & Whitney
ELT:	C126 installed, activated, did not aid in locating accident	**Engine Model/Series:**	
Registered Owner:	V2 Aviation LLC	**Rated Power:**	450 Horsepower
Operator:	Pacific Airways	**Operating Certificate(s) Held:**	Commuter air carrier (135)
Operator Does Business As:		**Operator Designator Code:**	460J

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PAKT	**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	320°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.93 inches Hg	**Temperature/Dew Point:**	21°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Ketchikan, AK (KTN)	**Type of Flight Plan Filed:**	Company VFR
Destination:	Ketchikan, AK (5KE)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class E

Airport Information

Airport:	Ketchikan Harbor 5KE	**Runway Surface Type:**	Water
Airport Elevation:	0 ft msl	**Runway Surface Condition:**	Water-glassy
Runway Used:	W	**IFR Approach:**	None
Runway Length/Width:	3893 ft / 1000 ft	**VFR Approach/Landing:**	Full stop

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	4 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	5 None	**Latitude, Longitude:**	55.351943,-132.491943(est)

Administrative Information

Investigator In Charge (IIC):	Banning, David
Additional Participating Persons:	
Original Publish Date:	December 3, 2020
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=99719

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties … and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available here.