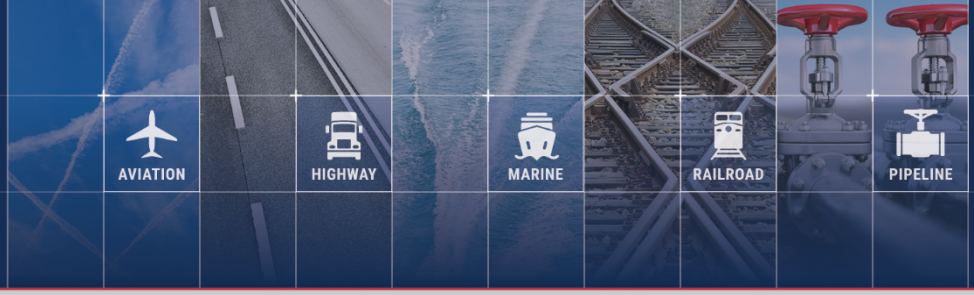

Aviation Investigation Final Report

Location:	Ketchikan, Alaska	**Accident Number:**	ANC21FA069
Date & Time:	August 5, 2021, 10:50 Local	**Registration:**	N1249K
Aircraft:	DEHAVILLAND DHC-2 MK.I	**Aircraft Damage:**	Destroyed
Defining Event:	Controlled flight into terr/obj (CFIT)	**Injuries:**	6 Fatal
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled - Sightseeing		

Analysis

The accident flight was the pilot's second passenger sightseeing flight of the day that overflew remote inland fjords, coastal waterways, and mountainous, tree-covered terrain in the Misty Fjords National Monument. Limited information was available about the airplane's flight track due to radar limitations, and the flight tracking information from the airplane only provided data in 1-minute intervals. The data indicated that the airplane was on the return leg of the flight and in the final minutes of flight, the pilot was flying on the right side of a valley. The airplane impacted mountainous terrain at 1,750 ft mean sea level (msl), about 250 ft below the summit.

Examination of the wreckage revealed no evidence of preaccident failures or malfunctions that would have precluded normal operation. Damage to the propeller indicated that it was rotating and under power at the time of the accident. The orientation and distribution of the wreckage indicated that the airplane impacted a tree in a left-wing-low attitude, likely as the pilot was attempting to maneuver away from terrain.

Review of weather information for the day of the accident revealed a conditionally unstable environment below 6,000 ft msl, which led to rain organizing in bands of shower activity. Satellite imagery depicted that one of these bands was moving northeastward across the accident site at the accident time. Federal Aviation Administration (FAA) weather cameras and local weather observations also indicated that lower visibility and mountain obscuration conditions were progressing northward across the accident area with time. Based on photographs recovered from passenger cell phones along with FAA weather camera imagery, the accident flight encountered mountain obscuration conditions, rain shower activity, and reduced visibilities and cloud ceilings, resulting in instrument meteorological conditions (IMC) before the impact with terrain.

The pilot reviewed weather conditions before the first flight of the day; however, there was no indication that he obtained updated weather conditions or additional weather information before departing on the accident flight. Based on interviews, the accident pilot landed following the first flight of the day in lowering visibility, ceiling, and precipitation, and departed on the accident flight in precipitation, based on passenger photos. Therefore, the pilot had knowledge of the weather conditions that he could have encountered along the route of flight before departure.

The operator had adequate policies and procedures in place for pilots regarding inadvertent encounters with IMC; however, the pilot's training records indicated that he was signed off for cue-based training that did not occur. Cue-based training is intended to help calibrate pilots' weather assessment and foster an ability to accurately assess and respond appropriately to cues associated with deteriorating weather. Had the pilot completed the training, it might have helped improve his decision-making skills to either cancel the flight before departure or turn around earlier in the flight. The operator's lack of safety management protocols resulted in the pilot not receiving the required cue-based training, allowed him to continue operating air tours with minimal remedial training following a previous accident, and allowed the accident airplane to operate without a valid FAA registration.

The operator was signatory to a voluntary local air tour operator's group letter of agreement that was developed to improve the overall safety of flight operations in the area of the Misty Fjords National Monument. Participation was voluntary and not regulated by the FAA, and the investigation noted multiple instances in which the LOA policies were ignored, including on the accident flight. For example, the accident flight did not follow the standard Misty Fjords route outlined in the LOA nor did it comply with the recommended altitudes for flights into and out of the Misty Fjords.

FAA inspectors providing oversight for the area reported that, when they addressed operators about disregarding the LOA, the operators would respond that the LOA was voluntary and that they did not need to follow the guidance. The FAA's reliance on voluntary compliance initiatives in the local air tour industry failed to produce compliance with safety initiatives or to reduce accidents in the Ketchikan region.

Probable Cause and Findings

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

The pilot's decision to continue visual flight rules (VFR) flight into instrument meteorological conditions (IMC), which resulted in controlled flight into terrain. Contributing to the accident was the FAA's reliance on voluntary compliance with the Ketchikan Operator's Letter of Agreement.

Findings

Personnel issues	Decision making/judgment - Pilot
Environmental issues	Below VFR minima - Contributed to outcome
Aircraft	Instrument flight capability - Attain/maintain not possible

Factual Information

History of Flight

Enroute-cruise	VFR encounter with IMC
Enroute-cruise	Controlled flight into terr/obj (CFIT) (Defining event)

On August 5, 2021, about 1050 Alaska daylight time, a DeHavilland DHC-2 (Beaver), N1249K, was destroyed when it was involved in an accident near Ketchikan, Alaska. The airline transport pilot and five passengers were fatally injured. The airplane was operated by Southeast Aviation, LLC, as a Title 14 *Code of Federal Regulations (CFR)* Part 135 on-demand sightseeing flight.

The pilot began his assigned duty day about 0600 on the morning of the accident. He was scheduled to complete two flights into the Misty Fjords and another flight to pick up passengers and cargo in Hyder, Alaska. About 0630, he reviewed weather information with the owner of the company using Federal Aviation Administration (FAA) weather cameras, ForeFlight, and the Windy website, concluding that the weather was decent. Before picking up the passengers for the first flight into the Misty Fjords, they rechecked the weather and confirmed that "the weather looked good."

An airplane fueler noted that the pilot performed a preflight inspection of the airplane and then asked the fueler to fill the front fuel tank to capacity (35 gallons) and the center tank to 20 gallons of fuel. The pilot departed from Ketchikan Harbor Seaplane Base (5KE), Ketchikan, Alaska, on the first passenger flight of the day about 0752, and returned to the dock about 0921. According to passengers on the first flight, in the final few minutes of the flight while approaching Ketchikan, the cloud ceiling was dropping, the sky was full of clouds and fog, and the pilot was "ducking" around to avoid clouds.

Between the first and second flight, the owner asked the pilot about the weather, and the pilot told him that the weather for the Misty Fjords flight was "good"; however, he should cancel the trip to Hyder, Alaska, because "he didn't have the ceiling back there for it."

Before the second flight into the Misty Fjords, the pilot asked the fueler to fuel the airplane to the same specifications as the previous flight. The pilot departed on the accident flight about 0939. Figure 1 is a photograph taken by a passenger on the accident flight before departure.

Figure 1. Photograph taken by a passenger on the accident flight prior to departure. Image depicts the left side view from the accident airplane and shows rain on the passenger window.

The airplane was equipped with a Spidertracks flight tracking system, which provided real-time aircraft flight tracking data transmitted at 1-minute intervals via satellites to an internet-based storage location. The Spidertracks data indicated that the airplane flew through the Misty Fjord Monument and landed on Big Goat Lake about 1018. At 1027, the airplane departed the lake to return to Ketchikan Harbor. The airplane began crossing the Behm Canal traveling southwest at an altitude of 2,914 ft mean sea level (msl). Throughout the flight, the airplane continued to descend while maneuvering through the terrain and flying through areas of reduced visibility as depicted by passenger photographs. Figure 2 is a photograph taken by a passenger at 1048 out the left side of the airplane.

Figure 2. Photograph taken by passenger at 1048.

The last two Spidertracks returns indicated that the airplane was flying alongside the northern (right) side of the valley. The final satellite tracking system transmission from the airplane was at 1048, at an altitude of 1,730 ft msl and a ground track of 261° true. Figure 3 depicts the Spidertracks data from throughout the accident flight.

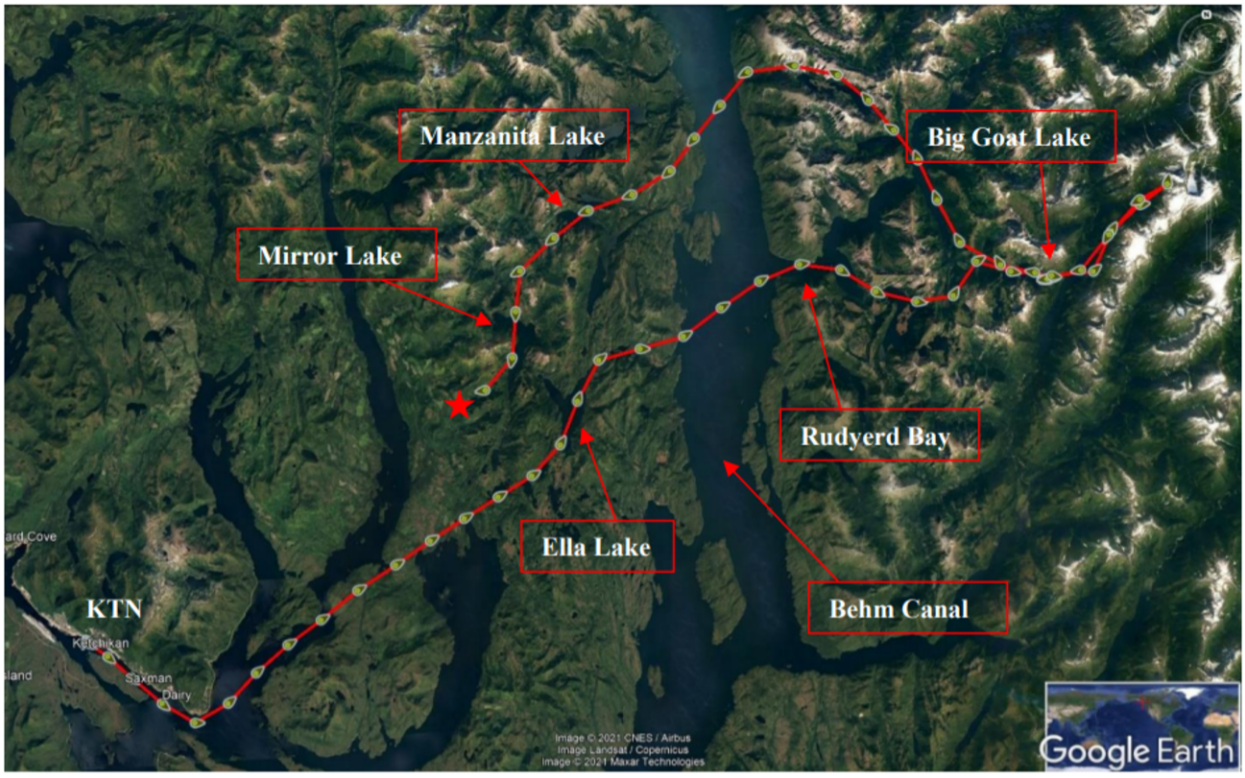

Figure 3. Spidertracks image of accident flight. Arrows denote direction of travel and red star indicates approximate location where accident occurred.

About 1050, the United States Coast Guard (USCG) Alaska received a 406-Mhz emergency locator transmitter (ELT) signal assigned to the accident airplane. After being notified of an overdue airplane and reports of an ELT signal within the Misty Fjords, search and rescue personnel from the USCG Air Station Sitka and Temsco Helicopters, Inc began searching for the missing airplane. The airplane was located about 1120; USCG rescue personnel reached the accident site later that afternoon and confirmed that there were no survivors.

Pilot Information

Certificate:	Airline transport; Commercial	**Age:**	64,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land; Multi-engine sea	**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 2 With waivers/limitations	**Last FAA Medical Exam:**	April 6, 2021
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	May 12, 2021
Flight Time:	(Estimated) 15552 hours (Total, all aircraft), 8000 hours (Total, this make and model), 15300 hours (Pilot In Command, all aircraft), 124.1 hours (Last 90 days, all aircraft), 40.7 hours (Last 30 days, all aircraft), 5.3 hours (Last 24 hours, all aircraft)		

The pilot, age 64, held an airline transport pilot certificate with a rating for airplane multiengine land and commercial privileges for airplane single-engine land and sea and airplane multiengine sea. The pilot's most recent FAA second-class airman medical certificate was issued on April 6, 2021, with a limitation for corrective lenses.

According to the operator's records, the pilot had accumulated 15,552 total hours of flight experience. He had about 8,000 hours of flight experience in the accident airplane make and model. In the 30 days before the accident, he had accumulated 40.7 hours, with 5.3 hours in the 24 hours before the accident.

A review of FAA records showed that the pilot was involved in an accident with another DHC-2 operated by the same operator on July 9, 2021, at Coffman Cove, Alaska. FAA records indicated that he did not taxi out into the channel to clear his takeoff run because he was in a hurry to get back due to other flights on the schedule. During the takeoff, he did not see a marine buoy until the airplane was on step. He attempted to depart over the buoy; however, the front spreader bar contacted the buoy and the airplane nosed over into the water and sank. The pilot was uninjured and the airplane was substantially damaged (NTSB accident number ANC21LA057).

Recent Training and Proficiency Checks

According to Southeast Aviation, LLC, the pilot completed initial DHC-2 training on May 12, 2015. He completed subsequent recurrent training on May 21, 2016, and June 12, 2017. He completed requalification training on May 8, 2019, and May 12, 2021.

His most recent recurrent ground training occurred on May 12, 2021. He began flying the 2021 season with Southeast Aviation, LLC on May 12, 2021, when he took his 14 *CFR* 135.293 and 135.299 check rides with the Director of Operations, which included basic instruments, partial panel, unusual attitudes, and inadvertent instrument meteorological conditions recovery. Each grade was satisfactory.

There was no record that the pilot received additional training following the July 9, 2021, accident. According to the Southeast Aviation, LLC Director of Operations, he, the owner, and the Chief Pilot had discussions, then they spoke with the pilot had him "take the airplane out and just fly it."

The pilot did not receive a recent instrument proficiency check nor was he required to have one.

Aircraft and Owner/Operator Information

Aircraft Make:	DEHAVILLAND	**Registration:**	N1249K
Model/Series:	DHC-2 MK.I	**Aircraft Category:**	Airplane
Year of Manufacture:	1965	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1594
Landing Gear Type:	Float	**Seats:**	8
Date/Type of Last Inspection:	July 22, 2021 Annual	**Certified Max Gross Wt.:**	5370 lbs
Time Since Last Inspection:	51 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	15028 Hrs at time of accident	**Engine Manufacturer:**	Pratt & Whitney
ELT:	C126 installed, activated, aided in locating accident	**Engine Model/Series:**	R-985-AN-14B
Registered Owner:		**Rated Power:**	400 Horsepower
Operator:		**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	S03A

The accident airplane was a fixed-wing, single-engine airplane, equipped with floats and configured for a pilot, copilot, and three rows of seats.

The airplane was equipped for visual flight rules (VFR) flight only, and its instruments included an altimeter, attitude indicator, airspeed indicator, vertical speed indicator, heading indicator, turn coordinator, clock, and magnetic compass. It was also equipped with a King KY196 and Garmin GTR200 radio control panel for communications. The airplane was not equipped with a Terrain Awareness and Warning System (TAWS), nor was it required to be.

Maintenance records showed that, on the day of the accident, the airplane's tachometer indicated 2,035.4 hours. The most recent annual inspection was completed on July 22, 2021, at an aircraft total time of 14,977 hours, and an engine total time of 9,811 hours. According to a white board in the operator's office, a 100-hour inspection was due at 2,086.0 tachometer hours.

Weight and balance calculations for the accident flight indicated that the airplane was loaded within limits.

The airplane's FAA registration certificate was issued on June 10, 2015, and expired on July 30, 2021.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PAKT,80 ft msl	**Distance from Accident Site:**	18 Nautical Miles
Observation Time:	10:53 Local	**Direction from Accident Site:**	242°
Lowest Cloud Condition:	Few / 700 ft AGL	**Visibility**	3 miles
Lowest Ceiling:	Broken / 1800 ft AGL	**Visibility (RVR):**	6000 ft
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	150°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.9 inches Hg	**Temperature/Dew Point:**	13°C / 13°C
Precipitation and Obscuration:	Moderate - None - Mist		
Departure Point:	Misty Fjords, AK	**Type of Flight Plan Filed:**	VFR
Destination:	Ketchikan, AK	**Type of Clearance:**	VFR
Departure Time:		**Type of Airspace:**	

The weather reporting station closest to the accident site was located 18 miles southwest at Ketchikan International Airport (PAKT), Ketchikan, Alaska. Conditions reported at 1048 included wind from 150° at 7 knots (kts), 3 statute miles visibility, runway visual range on runway 11 varying between 6,000 ft and greater than 6,000 ft, light rain, mist, few clouds at 700 ft agl, broken ceiling at 1,800 ft agl, overcast skies at 2,500 ft agl, temperature of 13°C, dew point temperature of 13°C, and an altimeter setting of 29.90 inches of Mercury. The remarks indicated that it was an automated station with a precipitation discriminator with visibility varying between 1 and 3 miles and 0.03 inches of precipitation since 0953.

Satellite imagery generated about the time of the accident showed cloudy conditions over the accident site at the time of the accident with the cloud cover moving north-northeastward between 1030 and 1050. Infrared cloud-top temperatures over the accident were consistent with cloud-top heights of about 17,000 ft.

AIRMET advisory Sierra was issued at 0422 and was valid for the accident site at the accident time for mountain obscuration due to clouds and precipitation, occasional ceilings below 1,000 ft, and visibilities below 3 miles in light rain showers and mist.

An Area Forecast issued at 0422 and current at the time of the accident forecast scattered clouds at 800 ft, broken clouds at 1,200 ft, overcast clouds at 2,000 ft with cloud tops at 20,000 ft, occasional visibilities to 3 miles, light rain showers and mist and isolated instrument flight rules (IFR) conditions.

Other pilots flying passenger flights on the morning of the accident stated that there were low clouds in the valley in which the accident occurred. Pilots who assisted with the search and rescue efforts reported that the weather was overcast, the mountain tops were obscured, and the clouds were as low as 600 to 800 ft overcast in some of the valleys, including the valley of the accident location.

FAA Weather Cameras

The FAA weather cameras from Misty Fjords were located about 11 miles east-northeast of the accident site and provided the closest camera observations of the conditions in the area of the accident. The west-facing camera images (the direction of the accident site) depicted a large amount of cloud cover with cloud bases near mountain tops at 2,000 ft msl. In addition, the visibility was greater than 5.0 miles at 1041 and 1051, but the visibility dropped to between 2.5 and 1.0 miles between 1051 and 1101 when compared with clear day visual reference markers.

Similar weather conditions were observed at the Ketchikan, Minx Island, and Twin Island weather cameras, with degraded visibility and ceilings observed as early as 0937 on the Twin Island weather cameras. Based on the southeast-facing camera images from Ketchikan between 0932 and 0952, the accident pilot departed on the accident flight in precipitation and visibility conditions less than 2.5 miles. Figures 4 through 7 show annotated images from the west-facing Misty Fjords camera.

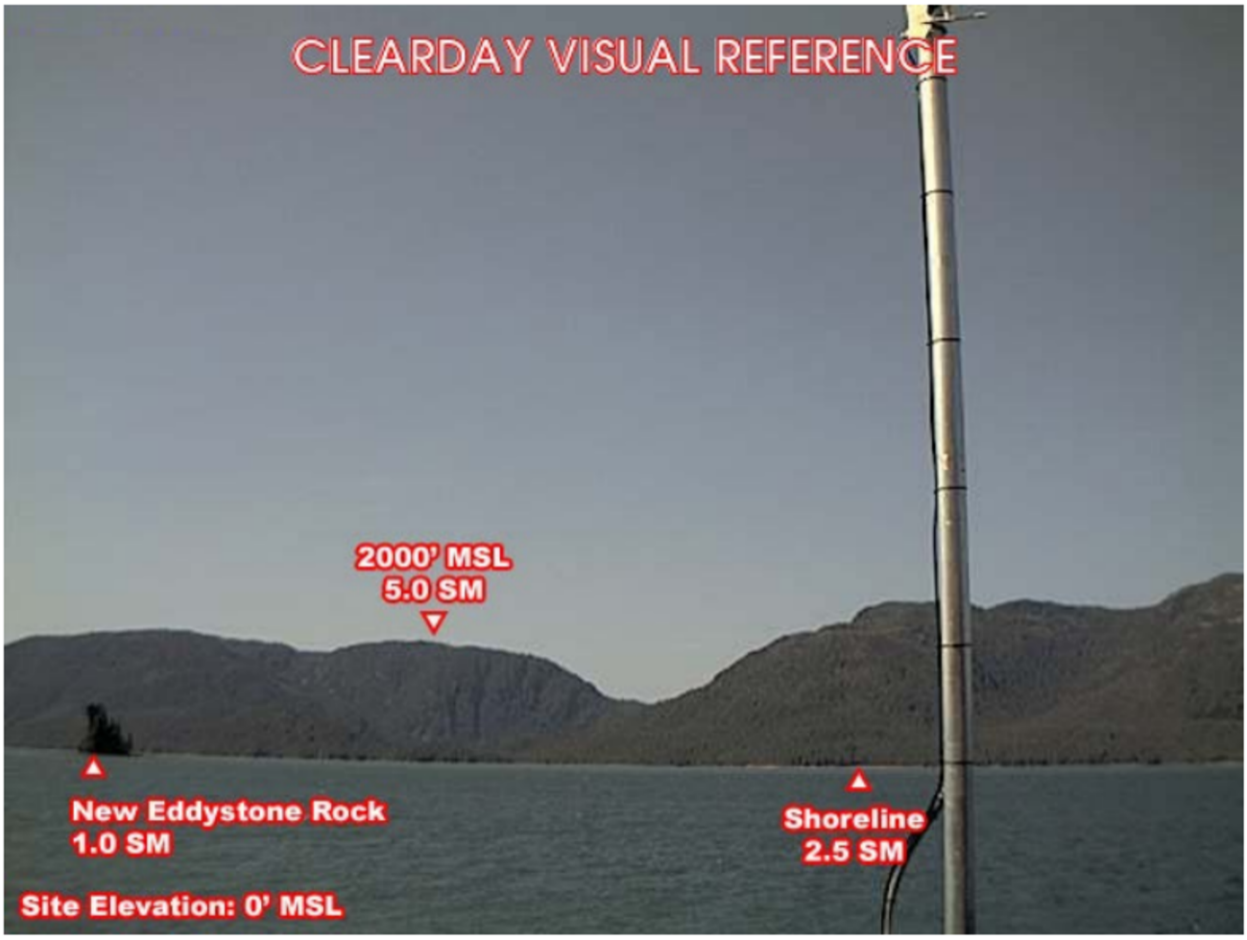

Figure 4. FAA weather camera from Misty Fjords west view from a standard clear sky weather day

Figure 5. FAA weather camera from Misty Fjords west view from 1041, which was just after the airplane crossed Behm Canal on the return portion of the accident flight.

Figure 6. FAA weather camera from Misty Fjords west view from 1051, which was about 3 minutes after the accident.

Figure 7. FAA weather camera from Misty Fjords west view from 1101, which was about 13 minutes after the accident.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	5 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	6 Fatal	**Latitude, Longitude:**	55.482583,-131.22532

The airplane impacted heavily wooded, mountainous terrain about 18 miles northeast of Ketchikan, Alaska, and 1.46 miles from the last satellite tracking system point at an elevation of about 1,750 ft msl. The highest part of the mountain that the airplane impacted was about 2,000 ft msl. The airplane initially impacted a tree about 435 ft from the main wreckage

location, and the outboard section of the left wing was located at the base of the tree. The inboard section of the left wing was located in a tree along the debris path, which was oriented on a magnetic heading of 242°. All major components of the airplane were located in the vicinity of the main wreckage.

The fuselage came to rest on its left side and was impact crushed. The right wing remained attached to the fuselage. The outboard section of the right wing was impact separated but remained attached through a cable. The empennage remained attached to the fuselage and was impact damaged. The rudder and vertical stabilizer remained attached to the empennage, but the vertical stabilizer tip was separated. The left horizontal stabilizer and elevator were impact separated. The right horizontal stabilizer remained attached to the empennage and exhibited leading edge damage. The right elevator was impact separated. The floats were separated from the impact, and the forward section of the left float was impact damaged. Flight control continuity was confirmed from the flight controls in the cockpit to all flight control surfaces.

The engine exhibited impact damage but remained attached to the airframe; several of the engine mounts were separated. The oil sump was impact damaged and breached. Fuel was noted in the line from the firewall to the engine. All cylinders remained secured to the engine. The crankshaft was rotated through 360°; it rotated smoothly, and crankshaft and valvetrain continuity were established through the engine. The cylinders were examined with a lighted borescope and no anomalies were noted.

All three propeller blades remained attached to the hub. The spinner was removed and exhibited impact damage. The propeller blades exhibited bending and chordwise scratching in several locations.

There were no preimpact mechanical malfunctions or failures with the airplane that would have precluded normal operation.

Additional Information

Ketchikan Commercial Operators Letter of Agreement

Tongass Aircraft Pilots Association

Local Ketchikan sightseeing operators worked with the FAA to develop voluntary safe operating procedures for commercial flights in Ketchikan and the Misty Fjords National Monument areas. The Tongass Aircraft Pilots Association (TAPA) was formed to address safety issues, air traffic congestion, communications, and noise considerations in Ketchikan, Tongass Narrows, and the Misty Fjords National Monument.

A voluntary Ketchikan Commercial Operators letter of agreement (LOA) was drafted that described in part, standard Misty Fjords National Monument tour routes, frequencies, altitudes, reporting points, choke points, non-standard Misty Fjords National Monument

routes, and best practices. The initial LOA between the operators was dated January 15, 2009, and revised May 15, 2019, and May 8, 2021.

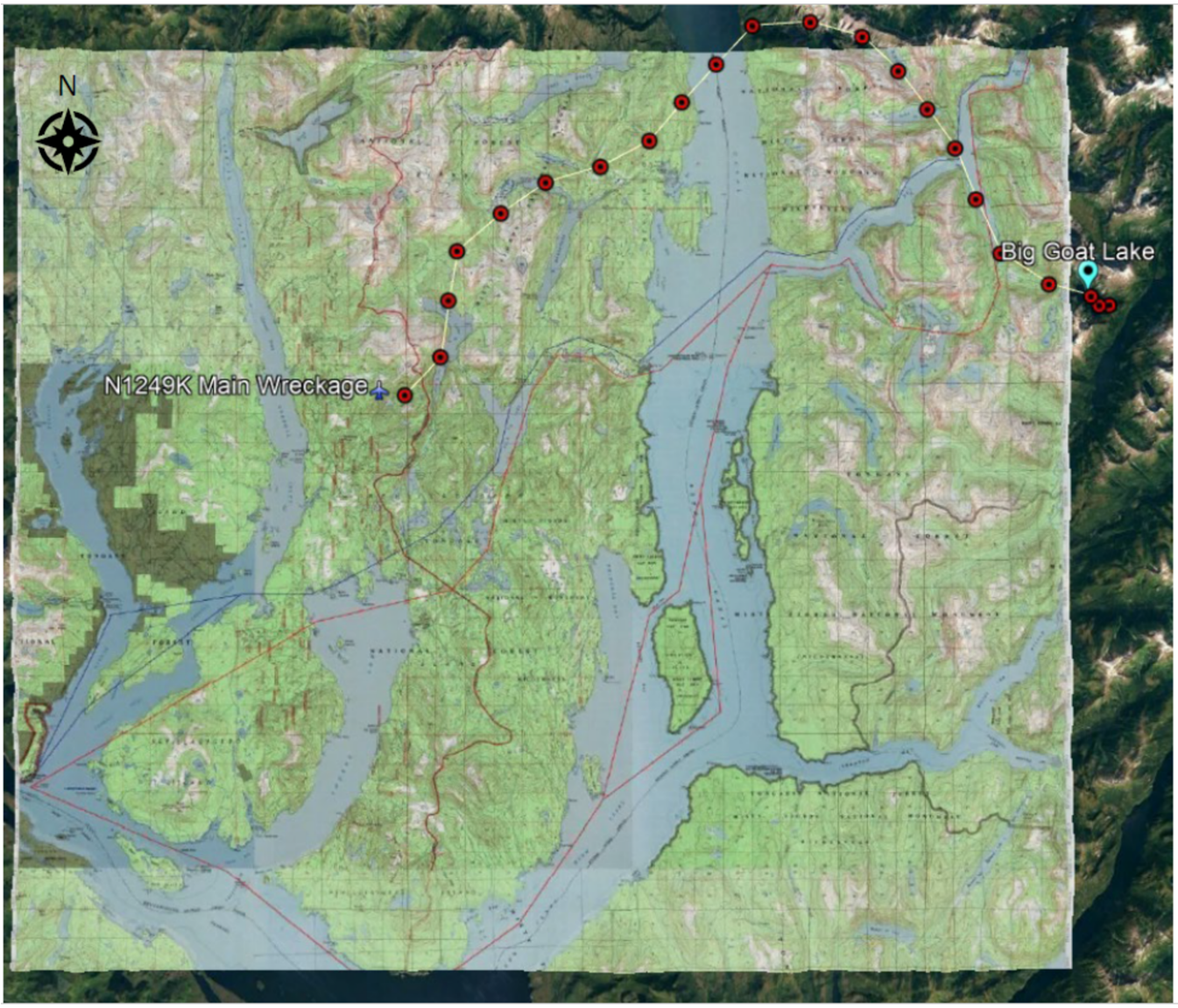

Figure 8. View of standard Misty Fjords Routes outlined in the Letter of Agreement. Also, the accident flight is overlayed and depicts the flight from Big Goat Lake to where the wreckage was located. The blue lines denote the inbound routes to the Misty Fjords. The red lines in the map denote the outbound routes from the Misty Fjords.

Southeast Aviation, LLC was a signatory on the LOA. The accident flight did not follow the standard Misty Fjords route outlined in the LOA, nor did it comply with the recommended altitudes for flights into and out of the Misty Fjords.

FAA Involvement with LOA

When asked to explain the FAA's role regarding the Ketchikan LOA, the Southeast Aviation, LLC Principal Operations Inspector (POI) stated that it was "just to encourage operator development and improvement of the LOA. We don't have a hand in writing the LOA." He stated that the FAA encourages operators to participate and be signatories to the LOA, but the LOA carries no regulatory requirement.

When asked further about the LOA, the POI stated, "Well, I think that… the LOA is not working," and added, "we need to move something more towards an SFAR (Special Flight Area Rules) that we have in other areas" such as in Hawaii and the Grand Canyon.

The Principal Maintenance Inspector (PMI) for Southeast Aviation, LLC was asked if the LOA was working, and she recounted an instance in which she heard a fixed-wing air tour operator over the radio that was flying over the Ketchikan Lakes region, a region designated by the LOA for helicopter operations. Since the airplane was flying contrary to the LOA, the inspector contacted the operator when they returned to their base and asked why they were operating in the designated helicopter area. The operator told her that the LOA was only voluntary. She then said, "there you go."

Flight recorders

The accident airplane was not equipped, nor was it required to be equipped, with any crew voice and/or image recorder or flight data recorder.

Medical and Pathological Information

The pilot reported no active medical conditions or medication use on his most recent FAA airman medical application. According to the autopsy performed on the pilot, the pilot's cause of death was multiple blunt force injuries.

Toxicology testing performed by the FAA Forensic Sciences Laboratory was negative for carbon monoxide, ethanol, glucose, and tested-for drugs.

Organizational and Management Information

Southeast Aviation, LLC was a 14 *CFR* Part 135 air carrier that held an on-demand certificate for common carriage pursuant to 14 *CFR* 119.21(a)(5). The company was authorized per Operations Specifications A003 to use the DHC-2-MK1 airplane for passenger and cargo operations in day VFR only. The company headquarters was located in Ketchikan, Alaska. It had an FAA-accepted General Operations Manual (GOM) that covered flight operations, records, and company policies.

Before the accident, the company operated one DHC-2 MK.1, the accident airplane, and had a total of six employees, and four seasonal pilots. All pilots were based at 5KE.

Minimum Visibility and Altitude Requirements

The VFR visibility requirements in 14 *CFR* 135.205 indicated that, "no person may operate an airplane under VFR in uncontrolled airspace when the ceiling is less than 1,000 feet unless flight visibility is at least 2 miles."

14 *CFR* 135.203, VFR minimum altitudes, stated that, "except when necessary for takeoff and landing, no person may operate under VFR…an airplane… during the day, below 500 feet above the surface or less than 500 feet horizontally from any obstacle."

The operator's GOM indicated that, during VFR flight, "each pilot is responsible for seeing and avoiding other traffic, terrain, and obstacles."

The company did not have more conservative defined weather minimums than those prescribed in 14 *CFR* 135.

Company-Approved Weather Information Sources

The Southeast Aviation, LLC GOM stated that pilots were approved to use weather information provided by the National Weather Service (NWS), a source approved by the NWS, certain military sources, or sources approved by the FAA.

At 0630 and 0725 on the day of the accident, the accident pilot accessed weather information from ForeFlight, FAA weather cameras, and Windy, which were approved weather sources.

Flight Locating

Southeast Aviation LLC was required to perform flight locating functions for tour flights, per 14 *CFR* Part 135.79. The company was not required to establish radio contact while en route, but the flight follower must concur with the pilot-in-command that a flight can be conducted safely before the flight may be initiated. During the accident flight, the owner of the company was acting as the flight follower and monitored the accident flight using Spidertracks.

The company operating manual stated that flight followers will be employees of the company and shall keep track of each aircraft through the daily flight log, and if there is any delay in the return of an airplane, the flight follower shall notify the Director of Operations.

Pilot Training and Procedures

Southeast Aviation, LLC had an FAA-approved training program that described five basic categories of training, which included initial training, transition training, differences training, recurrent training, and requalification training. The GOM stated that the Director of Operations was the only authorized company check airman and instructor for each of the five categories (both ground and flight).

The Director of Operations stated that pilots were trained to respond to inadvertent instrument meteorological conditions by turning 180° and making a possible descent. To simulate instrument conditions on a training flight and restrict outside vision during the recovery, he would have the pilot pull down his baseball hat and look only at the instrument panel.

Cue-Based Training

Cue-based training programs are based on the premise that exposing pilots to realistic depictions of deteriorating in-flight weather will help calibrate their weather assessment and foster an ability to accurately assess and respond appropriately to cues associated with deteriorating weather. The FAA does not require cue-based weather training under Part 135. According to the FAA, since 2012, all commercial air tour operators in Southeast Alaska have been providing cue-based weather training to their pilots that was developed specifically for their operations as a result of NTSB Safety Recommendation A-08-61, which recommended a cue-based training program that, "specifically addresses hazardous aspects of local weather phenomena and in-flight decision-making."

The operator's training manual stated that, "all company pilots will receive cue-based training through the use of PC ATD simulator or computerized reference material annually. Cue-based training will include training on routes, terrain, and weather conditions to the areas in which our operations are conducted."

According to the Southeast LLC Director of Operations, pilots received cue-based training in the past through the means of a compact disk (CD) and computer. He further stated that the CD had been lost for a while, they did not use the computer for training, and a simulator that provided cue-based training was "in parts over at the airport." A review of the accident pilot's Southeast Aviation, LLC training records showed that, on May 12, 2021, the Director of Operations and accident pilot signed a recurrent training certificate that included "cue-based evaluation."

Safety Procedures

Southeast Aviation, LLC did not have, nor was it required to have, a Safety Management System (SMS) and did not conduct any formal risk assessment before an air tour flight. The accident airplane did not have, nor was it required to have, a Flight Data Monitor (FDM)

installed, and Southeast Aviation, LLC was not required to have an FDM program to monitor the operations of its flights.

Company Policy and Safety Culture

The Southeast Aviation, LLC GOM's "Company Policy and Procedures Instructions" stated the following, in part:

> *All company flight operations shall be conducted in a professional and disciplined manner in the highest tradition of the air transportation industry. Safety of the aircraft and passenger comfort shall be considered of overriding and primary importance.*
>
> *All applicable rules, regulations, procedures and policies will be carefully followed unless emergency considerations or very sound judgment recommends deviation. When confronted with a matter of choice or interpretation in determining a course of action where the decisions are a matter of judgment, the safer alternative will always be chosen.*
>
> *Economic or service considerations cannot be allowed to compromise safety. However, this policy should not be interpreted as an invitation to disregard cost. If the Company is to succeed, all personnel must continually seek the most efficient and economical means of operation; however, it is to be interpreted as firm and standing instruction to the effect that safety and compliance with all safety regulations will always, without exception, take precedence over economic and all other considerations.*

FAA Oversight

The Juneau FSDO (Flight Standards District Office) provided oversight of Southeast Aviation, LLC's operating certificate. The POI and Principal Avionics Inspector (PAI) were based in Juneau, Alaska, and the PMI resided in Ketchikan, Alaska.

In an interview, the POI said that he had never had any enforcement actions or negative findings for Southeast Aviation, LLC. He interacted with the company owner or Director of Operations "once or twice a month." His interactions were either normal surveillance activities or discussions about the local area, best practices, and safety. He had not had the opportunity to conduct any surveillance activities on the Fiscal Year 2021 POI workplan for Southeast Aviation, LLC, since he had only recently returned to the role as POI.

Administrative Information

Investigator In Charge (IIC):	Kemner, Heidi		
Additional Participating Persons:	Dave Keenan; FAA AVP-100; Washington, DC Tom Johnson; FAA/FSDO; Anchorage, AK Les Doud; Hartzell Propellers; Piqua, OH Jim Kosmos; Southeast Aviation; Ketchikan, AK Lora Wilson; National Weather Service; Silver Spring, MD Dan Meyers; NATCA; Philadelphia, PA		
Original Publish Date:	September 21, 2022	**Investigation Class:**	2
Note:			
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=103647		