



Wreckage Examination Summary

NTSB ACCIDENT NUMBER: ANC22LA035

AIRCRAFT REGISTRATION/AIRCRAFT TYPE: N703TH, de Havilland DHC-3

ACCIDENT LOCATION: Yakutat, AK

HISTORY OF FLIGHT

On May 24, 2022, about 1510 Alaska daylight time, a de Havilland DHC-3 Turbine Otter airplane, N703TH, sustained substantial damage when it was involved in an accident near Yakutat, Alaska. The pilot and three passengers were seriously injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 135 on demand charter flight. The pilot had departed from Yakutat Airport (PAYA), Yakutat, Alaska destined for the Dry Bay Airport (3AK), Alaska.

The pilot reported that during the takeoff roll from PAYA, he applied takeoff engine power and about 2 seconds later attempted to raise the tail of the airplane by applying forward elevator. He said that the tail came up slightly, but it subsequently settled back to the runway. He thought this was unusual but attributed it to an aft loaded airplane, applied additional nose down trim and departed without incident. While enroute he stated that the tail of the airplane seemed to move up and down which he attributed to turbulence. Upon arrival at 3AK he entered a left downwind for runway 23. At an altitude of about 600 ft, he reduced engine power and extended the flaps to 10° abeam the end of the runway. He turned base leg about ½ mile from the approach end of the runway and slowed the airplane to 80 mph. While turning final he noticed the airplane seemed to pitch up, so he applied full nose down pitch trim and extended the flaps an additional 10°. On short final he applied full flaps, and the airplane abruptly pitched up to about a 45° angle. He stated that he applied full nose down elevator, verified the pitch trim, and reduced the power to idle. When the airplane was about 300 ft above ground level, the airplane stalled, broke slightly to the left and entered about a 45° nose down dive. After allowing the airplane to gain airspeed, he applied full back elevator.

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The airplane consequently impacted forested terrain near the approach end of runway 23 at an elevation of about 18 ft, which resulted in substantial damage to the fuselage, wings, and empennage.



PERSONNEL INFORMATION

The pilot age 51 held an airline transport pilot certificate with a multi engine land, single engine land, and single engine sea ratings. According to the 6120 dated June 1, 2022, his total flight time was 24,000 flight hours, with 6,100 hours in the accident airplane make and model.

AIRCRAFT INFORMATION

- de Havilland DHC-3
- S/N 456
- Hobbs 4645.5
- Walter turbine STC installed
- Baron wing leading edge cuff STC installed

METEOROLOGICAL INFORMATION

PAYA 242304Z AUTO 06003KT 10SM OVC013 08/06 A3002 RMK AO2 T00830056 TSNO

COMMUNICATIONS

AIRPORT INFORMATION:

Dry Bay Airport (3AK), Yakutat, Alaska, is a public-owned, non-tower-controlled airport 44 miles southeast of Yakutat, Alaska, at an elevation of 33 feet msl. At the time of the accident, the airport was served by one gravel surfaced runway oriented in a 05/23 configuration, 170 ft wide by 3,600 ft in length.

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ADDITIONAL INFORMATION:

- The cargo was removed from the airplane without the consent or authorization of the NTSB.
- Two Garmin handheld GPS units were removed from the airplane without authorization or consent from the NTSB. One GPS unit was returned to the NTSB at the time of the wreckage examination. Second GPS unit has been requested through the operators legal representation.

WRECKAGE AND IMPACT INFORMATION

Wreckage Location – (provided by the wreckage recovery company)

N59.164515, - W138.479861

Elevation - 18 ft msl

Heading - 115 degrees



Cockpit

- Cockpit exhibited extensive impact damage to the lower cockpit structure.
- Both main landing gear penetrated the fuselage near the sloping bulkhead. The left main landing gear separated from its attach points. The right main landing gear was partially separated.
- The cockpit floor was buckled.
- Windshields partially separated from windshield frames.
- Both cockpit door frames were broken, and the doors remained attached to the cockpit structure.

Cockpit Switches

- Boost pump - on
- Starter – off
- Igniter 1 – off
- Igniter 2 – off
- Generator – on
- Batt – off
- Avionics master – off
- Emergency circuit – off
- Emergency power – off
- Flight instrument dimmer – 10 o'clock position
- Fuel selector – between center and aft
- Transfer pump 1 – on
- Tailwheel lock – lock position
- Power lever – full forward
- Propeller lever – near min position
- Condition lever – run position
- Pitot heat – off
- Navigation light – off
- Beacon – off
- Tailwheel steering circuit breaker – open
- G5 circuit breaker – open
- Engine bleed air – in
- Mix valve indicator – down
- Emergency fuel shutoff – closed
- Particle separator – normal
- Parking brake – in
- Horn – not muted



Main Fuselage Section

- FS 111 top roof structure was fractured near the top of the cabin windows.
- The forward spar carry thru remained intact but was twisted.
- The left hand forward wing attach fitting was intact but cut by recovery crews.
- The right hand forward wing attach fitting was fractured.
- The rear spar carry thru was intact with the upper roof section torn upwards at about a 45 degree angle.
- The left hand aft wing attach fitting remained intact but was cut by recovery crew.
- The right hand aft wing attach fitting remained intact but was cut by the recovery crew.
- The fuselage structure at FS 194 was fractured and partially separated near the top of the cabin.
- The fuselage structure at FS 264 was fractured and partially separated with tearing from the aft upper corner of the left cargo door frame.
- The right side of the fuselage was misshapen and bulged out.
- The main fuselage belly structure sustained extensive impact damage, with accordion style crushing that extended upward into the fuselage sidewalls.

Rear Fuselage Section

- Exhibited accordion style crushing to the lower fuselage that extended upward into the sidewalls.
- The tailwheel assembly including the shock strut and steering mechanism was separated from the fuselage with portions of the tailwheel mounting structure.
- The aft upper structure at the horizontal stabilizer attach points was relatively undamaged.
- The horizontal trim jackscrew attachment block was secure with no sign of looseness or fretting.



Empennage

- The vertical stabilizer and rudder remained attached to their respective attach points and were relatively undamaged.
- The left horizontal stabilizer and elevator remained attached to their respective attach points and were relatively undamaged.
 - The flap interconnect tab remained attached to its respective attach points and was relatively undamaged.
- The right horizontal stabilizer fractured about midspan, and the elevator separated from the stabilizer and sustained impact damage.
 - The servo tab remained attached to its respective attach points but sustained impact damage. Two control rods were present on the servo tab.



Right Wing

- The right wing was intact with leading edge crushing from WS 60 to 135, about 5-7 inches aft.
- Slight leading edge damage was present from WS 135 – 210.
- Leading edge crushing was present from WS 210 – 235.
- Slight leading edge damage was present from WS 235 – 297.
- Leading edge crushing was present from WS 297 – 335.
- The aft portion of the wing tip was separated.
- The root rib was damaged.
- The wing strut remained intact but sustained impact damage. The upper and lower attach bolts and fittings remained intact. The strut was cut by recovery crews.
- The inboard foreflap hinge arm was bent outwards at the wing root.
- The inboard foreflap was bent near the center hinge point.
- The trailing flap was crushed at the root and the flap was bent inboard of the center hinge.
- The outboard foreflap was damaged near the root and the tip.
- The aileron sustained impact damage on the trailing edge skins.
- The inboard and outboard flap actuating rods were intact.



Left Wing

- The left wing was fractured and separated into two sections at WS 182 – 210.
- The inboard foreflap and trailing flap remained partially attached to the inboard section of the left wing and sustained extensive impact damage.
- The outboard foreflap and aileron remained attached to their center and outboard attach points and exhibited extensive impact damage.
- The wing strut remained intact but sustained impact damage. The upper and lower attach bolts and fittings remained intact. The strut was cut by recovery crews.

Flight Control Cables

- Elevator - Control continuity was established in the control cables from the control column to the quadrant in the rear of the fuselage at station 427 to the elevator control rod and to the elevators.
- Rudder - Control continuity was established from the rudder pedals to the quadrant at station 427 to the control rod and to the rudder.
- Right aileron – Control continuity was established in the direct cable from the control column to the cockpit floor with features consistent with tension overload to the fuselage wing joint where it was cut by recovery crews to the control quadrant at WS 247.50 in the wing to the aileron. Control continuity was also established in the balance cable from the right aileron to the fuselage wing joint where the cable was cut for recovery to the left fuselage wing joint with features consistent with tension overload. The remainder of the balance cable was not located.
- Left aileron - Control continuity was established in the direct cable from the control column to the cockpit floor to the left fuselage wing joint where it separated with features consistent with tension overload. The remainder of the direct cable was not located. The quadrant at WS 247.50 was torn from the structure with cable sawing present in the wing ribs at the cable run cutouts in the outboard wing section and portions of the inboard wing section.
- Rudder trim – Control continuity was established in the rudder trim cables to the rudder trim jack. The cables were fractured; however, all separations exhibited features consistent with tension overload.
- Elevator trim – Control continuity was established from the forward drum to the horizontal stabilizer trim jack. The cables were fractured; however, all separations exhibited features consistent with tension overload.
- Flap interconnect trim system – Control continuity was established from the quadrant located in the roof of the fuselage to the interconnect tab. The cables were fractured; however, all separations exhibited features consistent with tension overload.
- Flaps – The flap position could not be confirmed due to numerous breaks and fractures to the flap control system. No witness marks were identifiable on the side of the fuselage.



Seats

- Pilot seat – Was deformed and partially separated from its mounting structure and was equipped with a lap belt.
- Copilot seat – Was partially separated from its mounting structure and equipped with a lap belt.
- A single diagonal shoulder harness was available for the cockpit seats.
- Seats 1-7 – Were intact and mounted to the side wall of the fuselage.
- Seat 8 & 9 - Separated from the fuselage and were each equipped with a lap belt.



Engine

- Walter engine
- S/N 141013
- EASA-E-070

Propeller

- Avia – Czech Republic
- EASA-P-028
- 3-blade

Engine and Propeller Summary

The engine remained attached to the firewall. The hot section of the engine case was twisted and deformed. The propeller hub remained attached to the engine. All three propeller blades exhibited torsional twisting and chordwise scratching. The tips of two blades separated. A postaccident examination of the engine and propeller revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.