

AVIATION OCCURRENCE REPORT

COLLISION WITH TERRAIN

**BUFFALO NARROWS AIRWAYS
DE HAVILLAND DHC-3 OTTER C-GDOB
TERRACE, BRITISH COLUMBIA 30 NM 3
09 MAY 1996**

REPORT NUMBER A96P0082

The Transportation Safety Board of Canada (TSB) investigated this occurrence for the purpose of advancing transportation safety. It is not the function of the Board to assign fault or determine civil or criminal liability.

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Summary

The single-engine, float-equipped DHC-3 Otter departed Ketchikan, Alaska, at 0905 Pacific daylight time (PDT) on 09 May 1996 with a pilot and co-pilot on board. They were on a visual flight rules (VFR) ferry flight to Dawson Creek, British Columbia, en route to Buffalo Narrows, Saskatchewan. After a refuelling stop and weather briefing at Prince Rupert, British Columbia, the aircraft departed eastbound along the published Telkwa Pass VFR route. When the aircraft did not arrive at Dawson Creek, it was reported overdue. The next day, an extensive search for the missing Otter was commenced and wreckage was located by search and rescue aircraft at 1930 PDT, 30 miles east of Terrace, in the Telkwa Pass. The aircraft had struck mountainous terrain and was destroyed. Both occupants were fatally injured.

Ce rapport est également disponible en français.

Other Factual Information

The pilot-in-command, who was also the owner of Buffalo Narrows Airways, had just purchased the aircraft from Taquan Air in Ketchikan. He and his associate, also a licensed pilot and current on this aircraft type, intended to ferry the Otter to their base of operations in Buffalo Narrows, Saskatchewan. The pilot-in-command had about 10,000 hours total flight time, and the co-pilot had about 5,000 hours. Both pilots were experienced on the Otter, both held valid licences, and both had once held instrument ratings. Neither pilot, however, had significant experience flying in mountainous terrain.

Witnesses observed the pilot-in-command in the left-hand seat and the co-pilot in the right-hand seat during the take-off from Seal Cove, the water aerodrome at Prince Rupert. The aircraft was not equipped with rudder control pedals on the right-hand side, nor were they required by regulation. Pathological examinations identified injury patterns to both occupants which were consistent with high speed impact.

The injuries to the pilot's hands and feet were not consistent with the characteristic injury patterns normally identified with manipulating the flight controls at impact. The co-pilot, however, did exhibit injuries consistent with manipulating the flight controls at impact. Nevertheless, during the impact sequence, the occupants tumbled several thousand feet down the mountainside, and the observed injury patterns were not considered as definitive evidence to positively identify which pilot was at the controls. Although it would have been possible for the pilots to have exchanged seat positions while in flight, there is no conclusive evidence that they had done so.

The aircraft had just been completely rebuilt by Taquan Air, and it was flown on a one-hour test flight prior to this ferry flight. The cargo on board the Otter at take-off from Ketchikan included all the known technical records for the aircraft, and spare aircraft parts for the floats and landing gear assemblies. As well, there were eleven 5-gallon plastic gasoline containers. Ten of these were filled with fuel and one with aircraft engine oil. The containers were reportedly not restrained by either a cargo net or tie-down devices. The pilot checked the aircraft fuel tanks for water before the aircraft departed Ketchikan.

Based on the amount of cargo carried on board at the time of departure from Ketchikan, the centre of gravity of the aircraft was estimated to have been within the prescribed limits, and the aircraft weight was estimated to have been close to the maximum allowable of 8,000 pounds. Neither the draft of the floats before the aircraft began to water taxi nor the length of the take-off run was excessive.

The pilot landed at Prince Rupert to clear Canadian Customs, refuel, and obtain a weather briefing. The aircraft was refuelled with 100 octane low-lead aviation gasoline, and the forward, centre, and aft fuel tanks were filled to capacity. Following the accident, the distributor of the aviation fuel at Seal Cove tested the fuel source and found no evidence of water or other contamination.

The Prince Rupert flight service station (FSS) specialist provided the pilot with a comprehensive weather briefing, covering both the Skeena River and Telkwa Pass published VFR routes through the mountains.

Although the weather forecast called for visual meteorological conditions (VMC) on both routes, the specialist recommended that the pilot take the Skeena River VFR route so that he could use lower en route altitudes if he encountered adverse weather. The pilot expressed his preference to fly the Telkwa pass because it was significantly shorter.

Reduced visibility in snow showers was forecast because of convection-type activity. During the briefing, the FSS received a pilot report (Pirep) which indicated that the Telkwa Pass route was open at that time. The ceiling in the pass was reported to be 6,500 feet above sea level (asl), 3,500 feet above ground level at the highest point in the pass. The visibility was reduced occasionally to 10 miles in light snow showers. A video recording, taken by the pilot who made the Pirep two and one-half hours before the Otter entered the Pass area, showed good visual meteorological conditions. Light turbulence was also evident in the recording.

The occurrence flight departed Seal Cove at 1307 PDT, and the pilot reported to the Terrace FSS at 1416 PDT that he was 10 miles south of Terrace at an altitude of 4,500 feet asl. The FSS specialist advised the pilot that the current Smithers weather, 30 miles further east along the flight-planned route, was as follows: estimated broken ceiling at 6,500 feet asl; visibility 25 miles; temperature 6 degrees Celsius; dew point -8 degrees Celsius; wind 120 degrees magnetic at 7 knots; altimeter setting 30.27 inches of mercury; nine-tenths towering cumulus cloud coverage; and virga and rain showers in all quadrants.

At 1429 PDT, the pilot reported his position to the Terrace FSS as 15 miles east of Terrace. He advised that they were encountering light snow showers and asked if there were any current Pireps which might indicate the extent of this shower activity; there were no recent reports available. No other radio communication from the flight was received by the Terrace FSS. An emergency locator transmitter (ELT) signal from the aircraft was later received by a search and rescue satellite (SARSAT).

Aerial reconnaissance did not establish the initial point of impact; however, the aircraft's engine was located at 7,000 feet asl, snagged in a rock outcropping on a 60-degree slope. It had apparently fallen down the steep terrain from a higher elevation.

Other pieces of wreckage, including two floats, part of a wing, other small aircraft pieces, and the plastic fuel containers, were located further down an avalanche slide area. Most of the wreckage was not visible, likely because it had been buried in snow or loose rock. The bodies of the pilot and co-pilot were found at about 4,000 feet asl, at the base of the slide area.

Only a small amount of wreckage was found at the accident site, and there was clear evidence of recent avalanche activity. The accident site was considered extremely hazardous because of the risk of avalanche or rock slide, and a ground examination of the limited wreckage was therefore not undertaken by accident investigators; however, a limited aerial examination was conducted. The accident site was overflowed several times during the summer after the snow had melted, but no additional wreckage was discernible.

Because of the hazardous nature of the site and the complete loss of the technical records which were on board the aircraft at the time of the accident, it was not possible to complete a technical investigation of the aircraft wreckage or aircraft documentation. There was no direct evidence found to suggest an in-flight breakup of the aircraft.

Analysis

The absence of aircraft wreckage and documentation precludes an analysis of the technical aspects of this accident. This analysis, therefore, concentrates solely on the operational aspects.

The high impact speed is indicative of either a loss of control followed by a rapid descent into terrain or controlled flight into unseen terrain. Given that the pilot reported encountering snow showers within 15 miles of the accident site, it is possible that the weather continued to deteriorate and may have adversely affected the pilot's ability to maintain visual contact with the terrain.

Findings

1. The weight and centre of gravity of the aircraft at the last take-off were estimated to have been within the prescribed limits.
2. The pilot was certified, trained, and qualified for the flight in accordance with existing regulations.
3. Marginal visual weather conditions existed in the vicinity of the accident site.
4. It is possible that deteriorating weather affected the pilot's ability to maintain visual contact with the terrain.

Causes and Contributing Factors

It was not determined why the aircraft struck terrain; however, it is likely that the contact occurred during conditions of reduced

visibility.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board, consisting of Chairperson Benoît Bouchard, and members Maurice Harquail, Charles Simpson and W.A. Tadros, authorized the release of this report on 19 February 1997.