

AVIATION INVESTIGATION REPORT

A01C0152

COLLISION WITH POWER LINE

NORTHWEST FLYING INC.

DE HAVILLAND DHC-2 BEAVER (SEAPLANE) C-FNFO

NESTOR FALLS, ONTARIO, 2 nm NW

07 JULY 2001

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

A de Havilland DHC-2 Beaver seaplane, registration C-FNFO, serial number 819, departed from Kakabikitchiwan Lake, Ontario, on a visual flight rules flight for Aremis Lake with only the pilot on board. Shortly after take-off, the aircraft was observed flying northbound at a very low altitude above Sabaskong Bay with the engine operating at a high power setting. The aircraft started to climb and bank to the left. The right wing struck the lower of two electrical wires strung across a channel between two islands. The aircraft was destroyed; the pilot sustained fatal injuries.

Ce rapport est également disponible en français.

Other Factual Information

The de Havilland DHC-2 Mk. I, was equipped with EDO 4580 floats. The aircraft had accumulated 11 843 hours since manufacture in 1955, and the engine and propeller had both accumulated 147 hours since overhaul. Records indicated that the aircraft had been certified and maintained in accordance with existing regulations. The aircraft had no known defects before the flight. The weight and the centre of gravity were within approved limits.

The pilot held a Canadian commercial pilot licence, issued 25 June 1998, with a seaplane endorsement. On 01 February 2001, his licence was reissued with an additional endorsement for multi-engine aircraft and a Group 1 instrument rating. His licence was validated by a Category 1 medical certificate issued on 07 June 1999, with no restrictions, and renewed on 26 April 2001. He had accumulated about 1500 hours' total flying time, with 1300 hours on floats; he had flown 100 hours during the previous 30 days and 200 hours during the previous 90 days. He started working for the operator on 15 May 2001 and had previously worked for an operator in Quebec.

The aircraft departed Kakabikitchiwan Lake, Ontario, at about 1530 central daylight time.¹ The observed weather at 1500 at Kenora, 44 miles northwest of the accident location, was as follows: winds 270° at 12 knots, visibility 15 statute miles, a few clouds at 7000 feet, a few clouds at 14 000 feet, temperature 27°C, dewpoint 10°C, and altimeter setting 29.77 inches of mercury. Very similar conditions existed at the accident location at the time of the accident.

After taking off westbound, the aircraft turned right to commence the 15-mile flight northeast to Aremis Lake, initially flying over Sabaskong Bay. Pilots flying for this operator normally cruise at 1000 to 2000 feet above ground level. However, instead of climbing, the pilot descended to about 20 feet above the water of Sabaskong Bay. Witnesses described the engine power setting as high and steady, indicating that the aircraft was not landing. It is not known why the pilot was flying so low.

Seconds after the witnesses first heard and saw the aircraft, it began climbing and banking to the left. Just north of the channel is a small peninsula of the mainland; the channel curves to the left around the peninsula and into another channel. The right wing struck a power line about two feet inboard of the wing tip. The remains of the aircraft came to rest upright on its floats about 50 yards past the power line. (See Appendix A.) The wire broke at the pole on the east side of the channel but remained attached to the pole on the west side. The wings and the fuselage roof had been torn off and were found on the bottom of the channel; the wire was found embedded in the right wing. The tail structure of the aircraft was torn away but remained attached by control cables. The engine and propeller were torn away but remained attached by fuel lines and control cables. The cockpit area remained relatively intact, and the pilot was still fastened to his seat. The shoulder harness strap was connected to the lap belt but had failed in overload and separated about 36 inches from the lap belt attachment point.

¹ All times are central daylight time (Coordinated Universal Time minus five hours).

Several boats in the vicinity responded immediately, including one operated by another employee of the occurrence pilot's employer. It was obvious to the first people on the scene that the pilot's injuries were fatal. They called police and towed the floating portion of the aircraft to a nearby dock.

Examination of the aircraft wreckage by investigators did not reveal any indication of a pre-impact aircraft system malfunction or airframe failure. All damage to the aircraft was consistent with overload forces from impact with the wire and the water.

The aircraft struck the lower, neutral wire of a pair strung overhead across the channel. It was three feet below the upper, energized wire. The upper wire was not damaged; after the accident, its lowest point was 49 feet above the water surface. Both wires were 10 mm in diameter and were made of four steel strands and three aluminum strands.

The wires were not marked to indicate their presence, nor were markings required by regulation. The pole on the east side of the channel was painted with alternating bands of orange and white; the one on the west side was not painted. Both poles were about 20 to 30 yards inland from the shore. Investigators in a boat retraced the path flown by the pilot and found that the poles were obscured by trees and were not visible from the channel until almost under the wire. The remaining wire could be seen against the blue sky background only from less than about 200 yards. Against a background of trees, it could be seen only from less than about 400 yards.

Canadian Aviation Regulation 601.19 specifies the following:

Where it is likely that a building, structure or object, including an object of natural growth, is hazardous to aviation safety because of its height and location, the Minister may, by order, direct the owner, or other person in possession or control of the building, structure or object, to mark it and light it in accordance with the standards specified in the *Standards Obstruction Markings Manual*.

The *Standards Obstruction Markings Manual* states the following:

1.2.1 Responsibility of the Minister It is the responsibility of the Minister to assess individual obstructions, namely buildings, structures, or objects, to determine if they are likely to constitute a hazard to air navigation and consequently require marking and/or lighting in accordance with the standards identified as such in this publication.

2.2 Obstructions Requiring Marking and/or Lighting Unless otherwise provided for in these standards, the following obstructions should be marked and/or lighted in accordance with the standards specified therein:

- (e) any other obstruction to air navigation that is assessed as a likely hazard to aviation safety in accordance with paragraph 2.3.1(a).

2.3 Transport Canada Aeronautical Evaluations The Minister may perform an Aeronautical Evaluation with respect to the following types of obstructions:

- (a) obstructions greater than 90 m (300 feet) AGL, but not exceeding 150 m (500 feet) AGL;
- (b) catenary wire crossings, including temporary crossings, where the wires or supporting structures do not exceed 90 m (300 feet) AGL;
- (c) obstructions less than 90 m (300 feet) AGL; and
- (d) any other obstruction specified in these standards.

2.3.1 Purpose of Aeronautical Evaluations Aeronautical evaluations are used by the Minister:

- (a) to determine, for the purposes of section 2.2, whether or not it is likely that an obstruction to air navigation is a likely hazard to aviation safety

No record was found of an aeronautical evaluation of Sabaskong Bay or an order directing the owner of the power line to mark it.

The power line was originally installed over the channel in the 1950s by a private owner. No information was available regarding the decision to place the wires overhead. When additional customers were added to the circuit in the 1970s, ownership of the wires was transferred to a utility company. The channel was occasionally used by aircraft water-taxiing to and from a nearby dock; take-offs and landings were done on the next channel immediately to the west.

For new installations, the utility company does not have any written standards governing whether a wire is placed overhead or underwater; rather, the company evaluates each situation on technical and economic factors. Transport Canada (TC) is also advised during the planning phase and, if an overhead wire is expected to be a hazard to aviation safety, may require it to be marked. Other power lines in the area of the occurrence run underwater in some locations and overhead in other locations; some are marked and some are not.

The *Canada Water Aerodrome Supplement* (WAS) is a civil aeronautical information document published annually. It contains information on known water aerodromes and is used by pilots as a reference to plan and safely conduct air operations. The 22 March 2001 edition was the most current at the time of this accident. It contained a chart of the Nestor Falls / Sabaskong Bay area, depicting the power line struck by the aircraft. (See Appendix A.) Listings of operational information in the WAS for the two registered water aerodromes at Nestor Falls and Sabaskong Bay both cautioned "Numerous P-lines near ldg area". The pilot's company indoctrination training included briefings on the hazards of power lines and the general locations of wires in the company's area of operations. When pilots were dispatched, the company briefed them on the location of wires near their destinations and recommended specific areas for landing and take-off. However, no information was received as to whether the occurrence pilot had been briefed about the specific wire involved in this occurrence.

Analysis

Although the power line was depicted on the chart in the WAS, and the pilot had been briefed about the hazard presented by power lines in the company's area of operations, it was not determined whether the pilot knew the location of this specific power line.

The power line was installed over the channel almost 50 years ago by a private owner, before the utility company assumed ownership of the circuit. No record was found of any TC evaluation of the power line. Therefore, the power line was likely never assessed to determine whether it constituted a hazard to aviation safety, and TC did not require the owner of the power line to install markers to indicate its presence.

The power line was invisible unless viewed at close range with knowledge that it was there. Additionally, the poles supporting the power line were hidden from view by trees. The pilot likely did not see the power line before the aircraft struck it.

The pilot's task was to fly at the normal cruise altitude of 1000 to 2000 feet above ground level to a lake 15 miles from his departure point. He had no operational reason to be flying at a low altitude over Sabaskong Bay. The engine was operating at a steady, high-power setting, indicating that the pilot was not making a precautionary landing on the water. The pilot might have recognized the boat operated by his co-worker, made a low pass toward the boat, and, just before striking the wire, started to climb and turn left to follow the channel around the peninsula.

The *Standards Obstruction Markings Manual* indicates that the Minister of Transport is responsible for assessing obstructions to determine if they are likely to constitute a hazard to air navigation and, consequently, to require marking. However, the manual states that the Minister *may* perform an aeronautical evaluation, indicating that there is some discretion in deciding whether to exercise the responsibility to assess obstructions. As a result, some obstructions, such as the wire in this occurrence, might not have been assessed and, consequently, were not marked.

Findings as to Causes and Contributing Factors

1. The power line running overhead the channel was invisible, except at very short range, and was not marked to indicate its presence.
2. The pilot was flying at a very low altitude and likely did not see the power line.

Findings as to Risk

1. The *Standards Obstruction Markings Manual* allows for discretion in deciding whether to assess obstructions, making it possible for some obstructions to not be assessed and, consequently, to not be marked.

Safety Action

Since this accident, the aircraft operator has posted notices in its operations room, stating that low flying and disregard of the *Canadian Aviation Regulations* will not be tolerated and that pilots are prohibited from flying to a location other than to where they are dispatched. When the operator dispatches pilots to a remote location, they will continue their current practice of briefing pilots on the location of wires and recommending specific areas for landing and take-off. The operator is planning to enhance training to emphasize the hazard presented by power lines.

TC regularly promotes safety awareness on the hazards of low flying through seminars and other promotional material such as the *Take-five* brochures and recurring wire-strike articles in safety newsletters.

TC has advised the Transportation Safety Board of Canada that, notwithstanding the discretionary wording of section 2.3 of the *Standards Obstruction Markings Manual*, all obstructions reported to TC are assessed. Additionally, a Notice of Proposed Amendment (NPA) has been issued for CAR 601.19 that will require proponents to advise TC of new construction, of modifications to an existing structure or of the launching of large moored balloons or kites. This requirement should ensure TC is informed of potential hazards to aviation and enable the department to perform the appropriate assessments.

The owner of the power line is planning, during 2002, to assess all its power line crossings on Lake of the Woods, of which Sabaskong Bay is a part, to ensure that they meet standards. Crossings that do not meet standards will be assessed for upgrading or replacement.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 09 October 2002.

Appendix A—Nestor Falls Area Chart

NESTOR FALLS ON

