

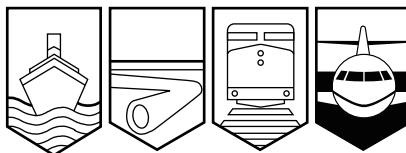
Transportation Safety Board
of Canada



Bureau de la sécurité des transports
du Canada

AVIATION INVESTIGATION REPORT

A04P0153



AIR PROXIMITY – SAFETY NOT ASSURED

NAV CANADA

VANCOUVER TOWER/AREA CONTROL CENTRE

VANCOUVER INTERNATIONAL AIRPORT,

BRITISH COLUMBIA, 4 nm s

05 MAY 2004

Canada

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.

Aviation Investigation Report

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Vancouver International Airport,
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Report Number A04P0153

Summary

A float-equipped de Havilland DHC-2, Mk 1 Beaver (registration C-GHMI, serial number 1215), operating as WCA305 (West Coast Air), was authorized by the Vancouver tower south controller for an eastbound take-off, on a visual flight rules flight plan, from the Fraser River just south of the Vancouver International Airport, British Columbia, with a right turn to the Vancouver (YVR) very high frequency omni-directional range (VOR) at 1000 feet. A de Havilland DHC-8-100 (registration C-FDND, serial number 129), operating as JZA8257 (Air Canada Jazz), was subsequently cleared for take-off from Vancouver International Airport on an instrument flight rules flight plan to Nanaimo, British Columbia, using Runway 08R, with a Richmond 8 standard instrument departure (SID). The Richmond 8 SID calls for a right turn at 500 feet and a climb on heading 141° magnetic (M) to 2000 feet.

JZA8257 climbed to 500 feet and initiated a right turn well before the end of the runway. The crew reported through 1000 feet, heading 140°M, and substantially reduced their rate of climb, which brought them into close vertical proximity with WCA305. Subsequently, the pilot took evasive action when he observed WCA305 below on the left side. The Vancouver departure south controller noticed the conflict and advised JZA8257 of “unverified” traffic on their left side at 1100 feet. He instructed JZA8257 to turn at their discretion to avoid the traffic. JZA8257 turned right and climbed on a heading of 190°M to resolve the conflict. The occurrence took place at 0818:47 Pacific daylight time.

Other Factual Information

Seaplane operations at Vancouver International Airport take place on the Middle Arm of the Fraser River about 3300 feet south of, and parallel to, Runway 08R/26L. The airspace surrounding the airport to a radius of seven nautical miles (nm), from the surface to 2500 feet, is Class C airspace (see Appendix A). Class C airspace is defined as follows in the *Aeronautical Information Publication* (A.I.P. Canada), section RAC 2.8.3:

Class C airspace is a controlled airspace within which both IFR [instrument flight rules] and VFR [visual flight rules] flights are permitted, but VFR flights require a clearance from ATC [air traffic control] to enter. ATC separation is provided between all aircraft operating under IFR and, as necessary, to resolve possible conflicts between VFR and IFR aircraft. Aircraft will be provided with traffic information. Conflict resolution will be provided, upon request, after VFR aircraft is provided with traffic information.

Traffic information is issued to advise pilots of known or observed air traffic which may be in proximity to their aircraft's position or intended route of flight warranting their attention. Conflict resolution is defined as the resolution of potential conflicts between IFR/VFR and VFR/VFR aircraft that are radar identified and in communication with ATC.

At 0816:00 Pacific daylight time,¹ the pilot of WCA305 took off from the river on an eastbound heading. At 0817:10, the pilot turned right, direct to the YVR very high frequency omnidirectional range (VOR), in accordance with his assigned departure procedure. At 0816:44, JZA8257 was cleared for take-off from the Runway 08R threshold by the tower south (TS) controller. At 0817:34, when the aircraft reached 500 feet, in the vicinity of the intersection of runways 08R and 12, the pilot turned right to a heading of 141° magnetic (M), in accordance with the assigned standard instrument departure (SID) procedure. The TS controller did not issue traffic information in a timely manner to JZA8257 because he did not anticipate a conflict.

Before 29 April 2004, it was the usual practice for controllers to depart smaller airline-type aircraft, such as DHC-8 aircraft, from the L2 intersection, about 3100 feet down Runway 08R. Changes to the application of wake turbulence minima came into effect on 05 May 2004, the day of this incident. These changes resulted in most controllers departing aircraft from the Runway 08R threshold instead of using an intersection departure. As a result, some aircraft on the Richmond 8 SID were able to commence their turn at an earlier point along the runway. JZA8257 commenced the departure turn at the intersection of runways 08R and 12, about 5500 feet from the threshold of Runway 08R. Radar data indicate that, after passing 1000 feet in the climb, JZA8257 reduced its rate of climb from 1200 feet per minute to 600 feet per minute.

¹ All times are Pacific daylight time (Coordinated Universal Time minus seven hours).

At 0818:21, WCA305 changed to and checked in on the tower traffic advisory (TA) frequency; the TS controller had not issued instructions to do so. Normally, VFR departures are transferred from TS to TA approximately 4 nm south of the airport, or when clear of traffic. The TA controller's radar identified WCA305; however, he was busy with traffic in the northern part of his airspace, north of the airport, and did not give traffic information or take other action to resolve the possible conflict with JZA8257 approaching from the right and behind WCA305.

At 0818:47, the two aircraft reached their closest proximity laterally, approximately ½ nm. At this point, they were separated only 400 feet vertically and safety was not assured.

Because of the short flying distance between the Vancouver and Nanaimo airports, flight crews often anticipate remaining, or request to remain, at 2000 feet instead of climbing to a higher assigned altitude. Air Canada Jazz crews request 2000 feet to Nanaimo so routinely that the departure south (DS) controller anticipated it. However, the DS controller cannot clear an aircraft to remain at 2000 feet to Nanaimo unless that altitude has been approved by both Vancouver tower and the Vancouver area control centre coordinator. At 0817:57, the DS controller asked the TS controller if a final altitude of 2000 feet for JZA8257 could be approved. The TS controller did not give that approval.

Visual meteorological conditions existed at the time of the occurrence.

Analysis

Weather was not considered to have been a factor in this occurrence.

When the TS controller cleared JZA8257 for take-off from the Runway 08R threshold, he did not issue traffic information regarding WCA305 because he did not anticipate a conflict. His thinking was based on his previous experience of intersection departure paths and anticipated climb rates. He anticipated that JZA8257 would be further east and well above WCA305, and that no conflict would develop. Although they did not ask for an en route altitude of 2000 feet, the crew of JZA8257 expected to be cleared to 2000 feet because it had become a common practice. It was this expectation that led them to substantially reduce their climb rate before reaching 2000 feet. The earlier turn to the south and the reduced climb rate resulted in the conflict with WCA305 while the two aircraft were flying on their assigned departure tracks.

Three different controllers (TS, TA, and DS) were involved in handling both aircraft, but no coordination took place among them regarding traffic information or conflict resolution. Because he was busy with traffic north of the airport, the TA controller did not see JZA8257 converging on WCA305 from behind and did not provide the degree of monitoring required to detect the potential conflict. JZA8257 sighted WCA305 and took evasive action, but without the benefit of timely traffic information provided by the ATC, and safety was not assured.

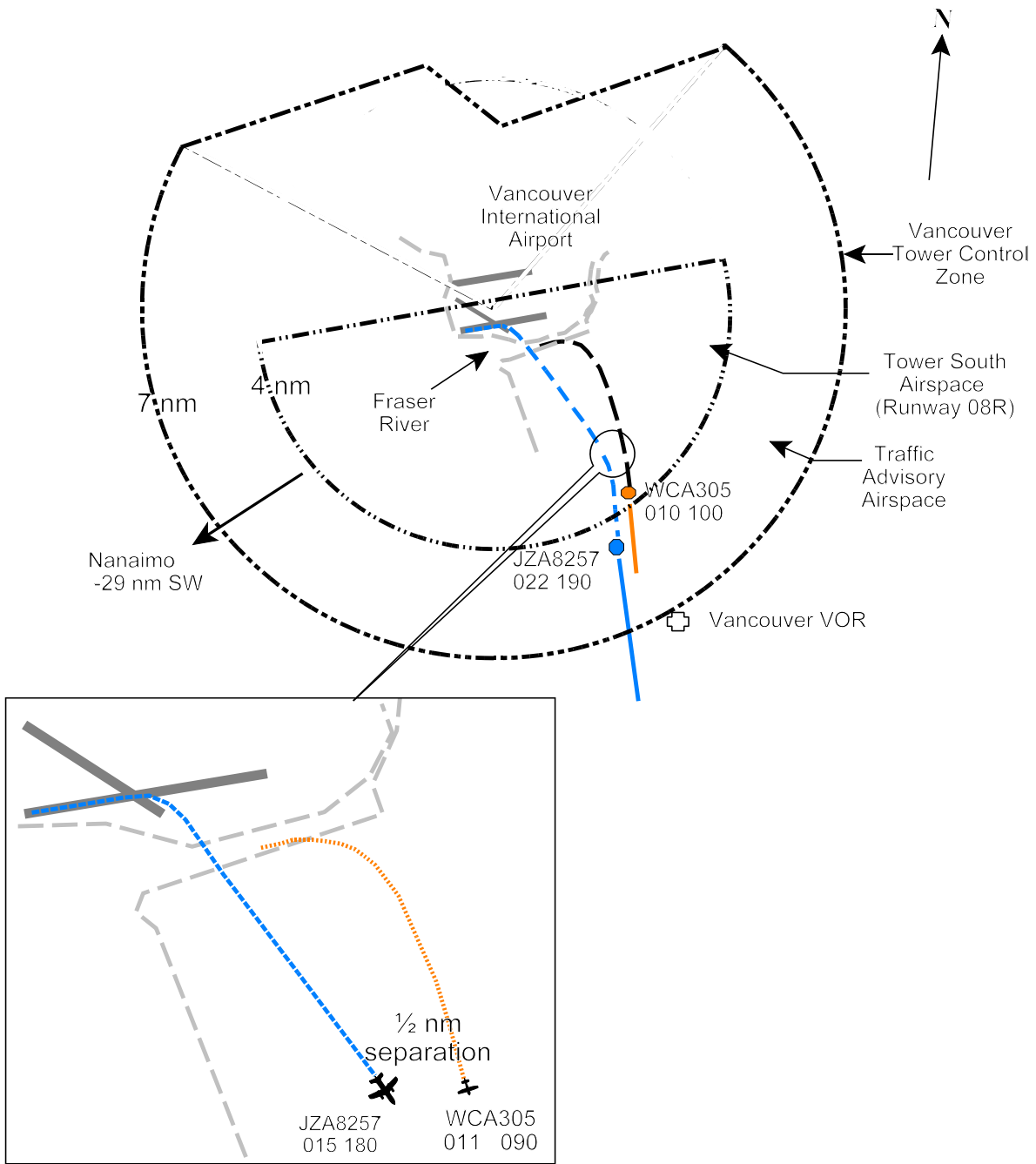
Findings as to Causes and Contributing Factors

1. The tower south (TS) controller cleared JZA8257 for take-off from the Runway 08R threshold without considering the change to the aircraft's departure profile from the usual intersection departure. As a result, an air proximity occurred between JZA8257 and WCA305.
2. The coordination among the TS, traffic advisory (TA), and departure south (DS) controllers that is necessary to fulfill the requirement for traffic information and conflict resolution did not take place. As a result, the two departing aircraft did not receive the air traffic control (ATC) services specified for the class of airspace within which they were flying.
3. The TA controller's attention was diverted to other traffic under his responsibility, and he did not see JZA8257 coming up behind WCA305. As a result, the two aircraft came into close proximity before JZA8257 saw the other aircraft and took evasive action.
4. Because the JZA8257 crew expected a clearance to remain at 2000 feet, they substantially decreased their rate of climb, creating the conflict with WCA305 and extending its duration.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 29 June 2005.

Visit the Transportation Safety Board's Web site (www.tsb.gc.ca) for information about the Transportation Safety Board and its products and services. There you will also find links to other safety organizations and related sites.

Appendix A – Area Diagram



JZA8257 sights WCA305 and turns right to avoid