Australian Government
Australian Transport Safety Bureau

ATSB TRANSPORT SAFETY INVESTIGATION REPORT
Aviation Occurrence Report – 200506294
Final

Engine Failure

74 km SE Melbourne Airport

3 December 2005

de Havilland Canada Dash 8, VH-TQW

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Abstract

At approximately 0725 Eastern Daylight-saving Time on 3 December 2005, during a scheduled passenger service from Wynyard, Tasmania to Melbourne, Victoria, the crew of the de Havilland Canada, Dash 8 aircraft, registered VH-TQW, heard a loud bang from the left side of the aircraft. The crew then observed the loss of the number one (left) engine's torque and oil pressure indication.

Following company procedures, the crew shut down the left engine, advised Melbourne Air Traffic Control of their situation, and continued the approach. A single engine landing was conducted at Melbourne.

A subsequent examination of the aircraft indicated that an internal failure of the left engine had occurred. The engine, a Pratt and Whitney Canada, PW121 model, serial number 120257, was removed from the aircraft and sent to the engine manufacturer's overhaul facility in Singapore for disassembly and examination. The examination was conducted under the surpervision of the Air Accident Investigation Bureau of Singapore on behalf of the Australian Tranport Safety Bureau (ATSB).

The engine examination found that the engine accessory gearbox bevel gearshaft (towershaft) had failed, separating into three segments. The failed towershaft disrupted the supply of fuel and oil to the engine, resulting in the engine failure.

As a result of this and other, similar, towershaft failures in this engine type, the results of this occurrence and a broader investigation are included in ATSB safety investigation report BO/200501912. That report is avaliable on the ATSB website at : http://www.atsb.gov.au.

THE AUSTRALIAN TRANSPORT SAFETY BUREAU

The Australian Transport Safety Bureau (ATSB) is an operationally independent multi-modal Bureau within the Australian Government Department of Transport and Regional Services. ATSB investigations are independent of regulatory, operator or other external bodies.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations. Accordingly, the ATSB also conducts investigations and studies of the transport system to identify underlying factors and trends that have the potential to adversely affect safety.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and, where applicable, relevant international agreements. The object of a safety investigation is to determine the circumstances in order to prevent other similar events. The results of these determinations form the basis for safety action, including recommendations where necessary. As with equivalent overseas organisations, the ATSB has no power to implement its recommendations.

It is not the object of an investigation to determine blame or liability. However, it should be recognised that an investigation report must include factual material of sufficient weight to support the analysis and findings. That material will at times contain information reflecting on the performance of individuals and organisations, and how their actions may have contributed to the outcomes of the matter under investigation. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

Central to the ATSB's investigation of transport safety matters is the early identification of safety issues in the transport environment. While the Bureau issues recommendations to regulatory authorities, industry, or other agencies in order to address safety issues, its preference is for organisations to make safety enhancements during the course of an investigation. The Bureau prefers to report positive safety action in its final reports rather than making formal recommendations. Recommendations may be issued in conjunction with ATSB reports or independently. A safety issue may lead to a number of similar recommendations, each issued to a different agency.

The ATSB does not have the resources to carry out a full cost-benefit analysis of each safety recommendation. The cost of a recommendation must be balanced against its benefits to safety, and transport safety involves the whole community. Such analysis is a matter for the body to which the recommendation is addressed (for example, the relevant regulatory authority in aviation, marine or rail in consultation with the industry).

FACTUAL INFORMATION

At approximately 0725 Eastern Daylight-saving Time[1] on 3 December 2005, during a scheduled passenger service from Wynyard, Tasmania to Melbourne, Victoria, the crew of the de Havilland Canada, Dash 8 aircraft, registered VH-TQW, heard a loud bang from the left side of the aircraft. The crew then observed the loss of the number one (left) engine's torque and oil pressure indication.

Following company procedures, the crew shut down the left engine, advised Melbourne Air Traffic Control of their situation, and continued the approach. A single engine landing was conducted at Melbourne.

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The engine examination found that the engine accessory gearbox bevel gearshaft (towershaft) had failed, separating into three segments. The failed towershaft disrupted the supply of fuel and oil to the engine, resulting in the engine failure.

The towershaft and associated components were sent to the ATSB for technical failure analysis. As a result of this and other, similar, towershaft failures in this engine type, the examination and technical analysis of this failure was incorporated into a broader investigation into towershaft failures on Pratt and Whitney Canada, PW100 series engines.

The results of this occurrence and the broader investigation are included in ATSB aviation safety investigation report BO/200501912. That report is available on the ATSB website at : http://www.atsb.gov.au

1 The 24-hour clock is used in this report to describe the time of day. Eastern Daylight-saving Time was Coordinated Universal Time (UTC) + 11 hours.