

## Challenger takes to the skies

Canadair's new executive jet, the *Challenger*, is proving to be a successful gamble by the company to provide the market with a plane suitable for the 1980s.

In the early 1970s, Canadair, a Canadian government corporation, took a calculated risk in deciding to build a completely new aircraft designed to fill a void in the executive jet market and replace outdated 1960s aircraft. As of January 1981, the company had sold 180 aircraft, with more than 100 orders being placed before the aircraft had received its certification.

For Canadair, the *Challenger* project could not have happened at a better time. The company was in an economic slump, with employment at an all-time low. When the go-ahead signal was given, it injected new life into the firm and, with the help of a \$70-million federal loan guarantee, Canadair set itself to the task.

Four years after approval of the concept, the firm's personnel had designed, tested and built a completely new executive jet aircraft.

### Basic features

What makes the *Challenger* so successful are three basic features: its wide body, advanced technology wings, and highly efficient Avco Lycoming engines. The new wing design, which is thicker than conventional ones, causes less drag and offers greater fuel capacity. The engines, referred to as high by-pass ratio engines, are quieter and more fuel efficient. Aircraft weight has also been kept down by



*A kitchenette in the Challenger.*

the extensive use of kevlar, an extremely strong yet light-weight organic fiber.

These factors together contribute to the 30 per cent increase in fuel efficiency, yet the aircraft flies faster (800 kilometres an hour or Mach 0.79) and farther (over 5,000 kilometres) than its competitors. In spite of all the measures taken to improve performance, passenger comfort has not been sacrificed. The wide body design allows much greater passenger comfort due to its unprecedented roominess, which includes stand-up headroom.

### Certification

Before the aircraft could actually be sold, it had to pass the certification requirements of Transport Canada, including 732 items of design and operational

safety, noise and emissions standards and reliability tests.

It was during one of many stall tests that *Challenger One* crashed, taking the life of the pilot and injuring the co-pilot. Investigators found that the accident was not caused by the aircraft itself, which was judged sound; rather, it was due to a malfunction of a releasing mechanism designed to disengage an experimental parachute, installed specifically for testing stall manoeuvres. The parachute is not part of the production configuration, but the aircraft is fitted with a duplicate stall protection system.

After the investigation, certification tests continued and Canadair received its Canadian type approval in the summer of 1980, after more than 800 flights and 1,500 hours flying time. Since Canadian regulations are basically the same as those of the American Federal Aviation Authority, U.S. type certification followed quickly.

(Article by Sadiq Hasnain in *Science Dimension*, 1981/1.)

## Survey shows Canadian computer industry on the rise

The Canadian computer industry has passed the \$4-billion mark in annual revenue and is now more than one-third Canadian-owned, according to a survey of more than 100 top companies conducted by Evans Research Corporation of Mississauga.

The latest figures, covering the industry across the country, show a record of growth that is ahead of the economy as a whole, and a major expansion in domestic ownership of computer companies.

### Rapid growth

In 1975, revenue of the industry was only \$1 billion, equivalent to 0.6 per cent of Canada's gross national product. The industry has grown by 17 to 25 per cent a year over the past five years, according to the survey, and it now accounts for more than 1.4 per cent of the GNP.

More than 1,000 smaller firms not included in the survey put the total revenue figure at \$4.06 billion, said Hugh O'Rourke, director of research for Evans Research.

Northern Telecom Limited of Montreal is included in the list for the first time. The one-quarter of the company's revenues accounted for by data processing operations puts Northern Telecom second only to IBM Canada Limited of Toronto



*The Challenger offers greater energy efficiency and passenger comfort.*

Canadair Ltd.