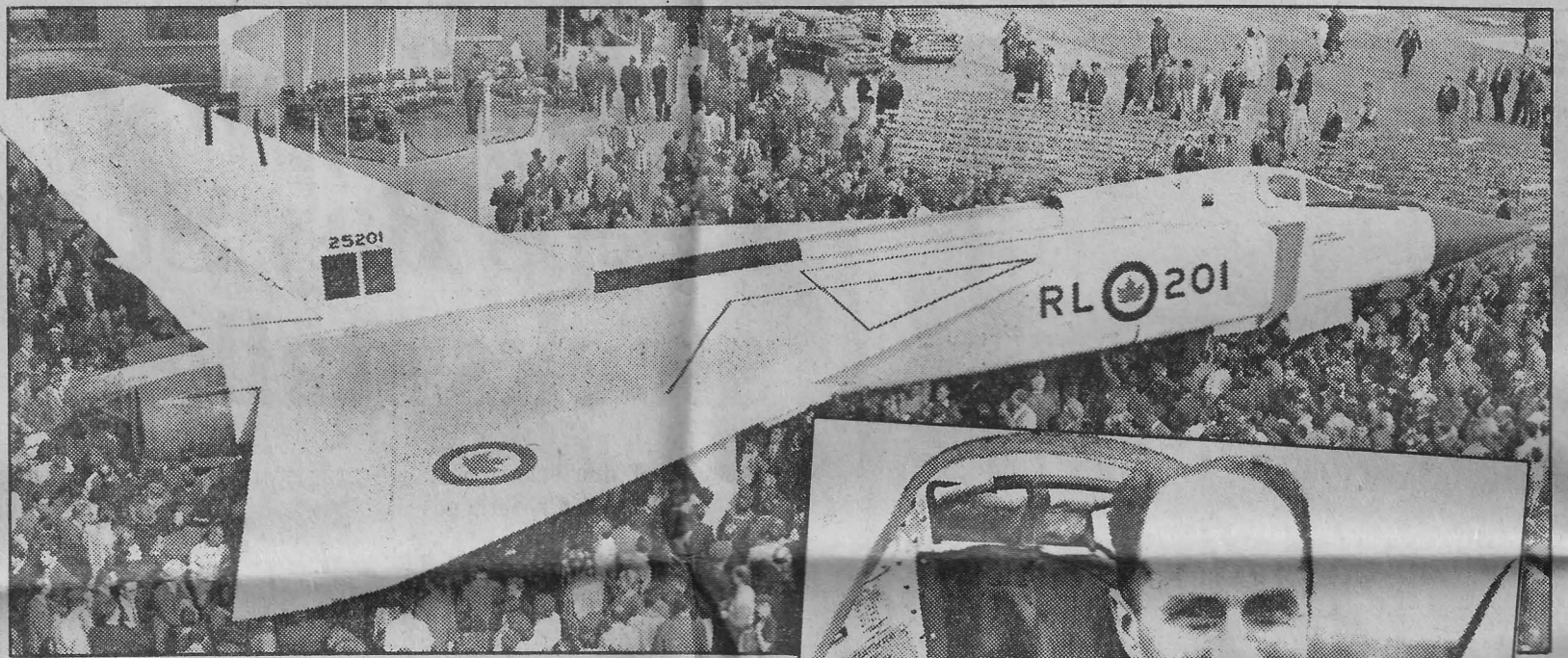


Arrow: Triumph that never was



'50s fighter might have put Canada in high-tech forefront

By Ron Lowman Toronto Star

Twenty-five years ago yesterday, a Polish-born test pilot lifted a fighter-aircraft off a Malton runway, watched by hundreds of Canadians whose skills had produced her.

"It was certainly more exciting for them than for me," recalled Jan Zurakowski of Barry's Bay, former chief test pilot for A. V. Roe Canada Ltd. (Avro).

"I was up there in the cockpit struggling to remember all the dos and don'ts, very conscious of my responsibilities and aware that success depended upon thousands of components, only a few of which were under my direct control," he says.

This afternoon more than 1,000 are expected to gather at International Centre, Airport Rd., where a new exhibition building will be named Avro Arrow Hall.

Zurakowski remembers Mach 1.98 as the highest speed he achieved in the Avro Arrow. Mach 1 is the speed of sound, which at sea level is roughly 1,223 kilometres per hour (760 miles per hour). With the Iroquois engines planned for later models, Mach 2.5 would have been possible - "and that's faster than today's CF-18 Hornet."

Canada is buying 138 U.S.-built, CF-18 Hornet fighter-inter-

Avro Arrow — In loving memory of a Canadian-designed and built fighter-interceptor aircraft that was years ahead of its time, and which made its first historic flight at Malton 25 years ago. Feb. 20, 1959.

DesRoches said it all begins in the universities, with the training of professional engineers and an assurance of their future.

"The real tragedy of the Arrow decision is that the government didn't develop an alternative for using the wonderful knowledge available (of the Arrow design and production team)," DesRoches said. "It was an abrupt break in a well-established pattern of innovation and development of highly-specialized products in Canada. We didn't have the leverage in world markets."

DesRoches said it was another 10 years before the industry found an alternative, which was the specialized export market approach with such products as de Havilland's STOL (short-takeoff-and-landing) aircraft and Canadair's Challenger executive jet.

"It didn't come easily and by the time it did, we'd lost a lot of our best brains," he said.

When Diefenbaker killed the

today's inflated dollars is around \$24 million.

Twenty months earlier, the (military) chiefs of staff had recommended that the Arrow program be abandoned. Six months before the announcement the government made up its mind.

A Star editorial at the time said the decision was "basically sound," but poorly handled.

Jim Floyd, vice-president of engineering at the time of the Arrow, says the great loss was enormously talented research-and-development people.

"They were the cream of the crop," he told The Star. "We were able in 1946, starting from scratch, to gather a magnificent team from Canada, Britain, Poland and the U.S. The world will never see a team like it again."

Many who had to sell their homes and find new aerospace jobs, filtered down to the large U.S. corporations. Some joined the U.S. National Aeronautics and Space Administration



Jan Zurakowski was test pilot on Arrow's maiden flight

Recalling wistfully the aircraft, on which \$335 million and eight years of work had been spent, Floyd said everything new in the way of avionics and weapons today could have been fitted into it. The big weapons bay in the fuselage, had to extend, fire its missiles and retract all in one-third of a second.

"Incredible," Floyd said.

Specifications for the Arrow with the Iroquois engine said it had to pull 2G (twice the force of gravity), maintain manoeuvrability, with no loss of speed, or altitude, while doing Mach 1.5 at 50,000 feet.

"I don't think the Hornet can do that today," he said. "We had an aircraft which would have lasted 30 years. I'm sure it would still have been in service today, if not in production."

Mike Cooper-Slipper and Don Rogers, Avro test pilots who were close to the program, said in many respects the Arrow was as good as the Hornet today.

"I thought the cancellation was just political. Diefenbaker and Crawford Gordon (Avro president) just locked horns," said Cooper-Slipper.

Rogers says he's sure that if the Arrow had been developed, it would have been every bit as good as the Hornet today.

ceptors from McDonnell Douglas Corp. for a price which is expected to hit \$5 billion, depending upon inflation, by the time the last one is delivered in 1988. Hornet vital statistics list its speed as Mach 1.8 plus.

The faster-than-sound era of flight was just dawning when Zura eased back the Arrow's stick. This was Canada's first supersonic aircraft. That first Arrow - RL 25201 - was powered by two Pratt and Whitney engines, but the later models were scheduled to be hurled through the sky by enormously powerful Orenda Iroquois jets.

Five built

Five Arrows were built. They were flown by Zura, Spud Potocki, Peter Cope and Flight Lieutenant Jack Woodman of the Royal Canadian Air Force. Only 70½ highly-successful hours were recorded before Conservative Prime Minister John Diefenbaker cancelled the program on Feb. 20, 1959. He ordered all Arrows dismantled, erased from the scene.

Today, the memory of the Arrow lives on — as a constant reminder of a Canadian high-technology triumph that might have been.

Jacques DesRoches, president of the Aerospace Industries Association of Canada, said to avoid the mistakes of the past and to originate and acquire high technology in Canada, there has to be a massive, strategic government plan, by sectors.

"It needs sustained investment and we must know where we want to go and how we propose to get there," he said. "We need to regain our ability to develop major systems."

Arrow program, union officials charged his government with "economic treason, political servitude and moral prostitution." They said Diefenbaker had virtually erased the Canadian-U.S. border in favor of U.S. domination of defence production.

Peter Podger, business representative for the International Association of Machinists, called it completely unforgiveable. Estimates at the time were that some 28,000 jobs had been lost, including those at 650 sub-contractor firms and suppliers of Avro.

Diefenbaker told the House of Commons that the decision was due to the rapidly-diminishing need for fighter-interceptors and the cost of \$7.8 million for each Arrow.

Production aircraft were expected to be \$3.75 million each. Approximate cost of a Hornet in



John Diefenbaker: As he looked when his government shot down Avro Arrow.

(NASA) and helped put Americans into space and on the moon.

Many engineers and technicians with McDonnell Douglas and General Dynamics in the U.S., are graduates of the Avro Arrow debacle.

"I took seven to Britain with me," said Floyd. "And we made a deal with NASA for the 30 people they took down there."

Flight director

Floyd recalled the late Jim Chamberlain, a graduate of the University of Toronto and of the Imperial College of Science and Technology in London, England, who helped run the 12-flight U.S. Gemini space program. Chamberlain, one of the Arrow's designers, won a NASA gold medal for his work. He became a U.S. citizen and died in League City, Texas, in 1981.

Another Arrow graduate was Don Hodges, who became flight director on the Gemini space shots. Alan Buley, an Arrow project designer, is now managing director of Fokker International in The Netherlands.

Floyd, who ran his own consulting company in Britain and advised the government on the supersonic Concorde airliner before coming home to Canada in 1981, blamed much of the Arrow mess on "Canada's fantastic inferiority complex. So many good inventions and ideas are frittered away.

"We don't have any confidence in ourselves. It's a shame because there are so many good ideas . . . and good Canadians. Most of the Avro people who lost their jobs were native-born Canadians, educated here, contrary to the popular belief that they were all newly-arrived Brits."

World-beater

Over at de Havilland Aircraft in Downsview, Peter Martin, an engineer and former Arrow man, said it was a world-beater but difficult to sell to other nations because of their NIH factor (not invented here). Had Canada been able to afford it, Britain and the U.S. might have bought some, although they wanted to patronize their own aircraft industries.

It is perhaps significant that today, the U.S. Marines are so enamored of the British Harrier that McDonnell Douglas has taken the vertical and short-takeoff-and-landing jet and improved it into what they now call the AV-8B Harrier II.

While mourning the Arrow, Martin said a real loss was the disappearance of the Iroquois engine, which had given Canada a big lead in technology.

"It was criminal to stop it, Martin said. "The design could have been built on for the benefit of Canada."

Martin, echoing the whole Arrow family, said: "It was a very, very good aircraft. We were proud of our achievement. It was one of the most magnificent efforts by Canadian engineers."

Everyone knows what happened to the Arrows. But what about her chief test pilot?

When his lovely aircraft vanished from the scene, Zura-kowski wanted to go to the U.S. and continue as a test pilot, but his wife wouldn't have any part of it. So for the last 22 years, Zura, now 68, has been the owner-operator of Kartuzu Lodge, near Barry's Bay, Ont.

Business isn't bad, thank you.