

# Avro Employees and NASA

## Or, Canadians putting America into Space

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This was written by [Christopher Gainor](#) and transferred to HTML by R. Kyle Schmidt

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### *Arrows to the Moon*

**How the engineers who created the Avro Arrow helped put Apollo on the moon**

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#### **First Report - January 1996**

Welcome to the first report on my book on the accomplishments of the British and Canadians who worked in NASA in the 1960s after the cancellation of the Avro Arrow Program. I plan to send out occasional reports on my progress with the book until it is completed. If you have any comments, suggestions, or questions, please contact me at my addresses at the end of this report.

#### **What's in a name?**

Arrows to the Moon is the tentative title of the book, although this is subject to change, including suggestions from anyone receiving this report.

Also up for grabs is the label for the group that joined NASA from Avro. Owen Maynard calls them the NASA Canadians. Rod Rose prefers to call them the AC Connection, AC standing for Anglo Canadians. In my discussions so far, I have not found unanimous approval for either name, and so I shall be careful about using either. Any other suggestions?

#### **Progress in 1995**

I started research early in 1995. In May, I visited Ontario, where I conducted interviews with Owen Maynard in Waterloo, and Stan Galezowski in Tecumseh, near Windsor. In September, I drove up to Salmon Arm, B.C., to interview Bruce Aikenhead. I also visited Ottawa for research at the National Archives.

In November, I flew down to Houston and began touring Texas doing interviews and research. I visited the Apollo Archives at Rice University in Houston, and the branch of the National Archives in Fort Worth where the Mercury and Gemini papers are stored. I interviewed Peter Armitage, Dr. William Carpentier, Thomas Chambers, Dr. Owen Coons, Burton Cour-Palais, Bryan Erb, Dennis Fielder, Rod Rose and Leslie St. Leger. I enjoyed my three weeks touring Texas and meeting all the people I interviewed.

#### **Plans for 1996**

I now have many tapes to transcribe and documents to go through. I will soon begin writing parts of the book.

I plan to visit the Washington D.C. area to conduct research at NASA Headquarters, Langley and elsewhere. I also hope to interview the former Avro-NASA hands living in the Washington area and elsewhere on the Eastern Seaboard, including John Hodge, Robert Lindley, Frederick Matthews, and John Shoosmith. Because of heavy demands at my job in the early part of this year, I can't schedule travel dates as yet.

I also plan to return to the Toronto area for more research and interviews with Owen Maynard and Stanley Cohn. I also hope to see David Ewart in California and Norman Farmer in Oregon during the coming year.

I will keep you posted on my progress with research, writing and publishing.

## **Still searching**

I'm still looking for some of the Canadian and Anglo STG personnel who I don't yet have addresses for, including David N. Brown, Richard R. Carley, Frank Chalmers, Jack N. Cohen, George Harris, John K. Hughes, John Meson, and George A. Watts. I have been given some leads on some of these people, but I have not yet been able to follow them up.

I also hope to contact relatives of Jim Chamberlin, Eugene Duret, Joseph Farbridge, Leonard Packham, Tecwyn Roberts and Robert Vale. As well, I will be speaking to other NASA personnel who worked with many of the people I am writing about. I spoke to Paul Purser when I was in Houston, and I hope to speak to others.

## **Thanks for your help**

Many thanks to every one of you who have helped me in the past year by sharing information or agreeing to an interview. Special thanks to those who showed me such wonderful hospitality on my research trips.

If you wish to contact me, I can be reached through the following means:

Address  
1490 Thurlow Road  
Victoria, BC  
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Or contact me through email at [cgainor@islandnet.com](mailto:cgainor@islandnet.com)

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### *Arrows to the Moon*

**How the engineers who created the Avro Arrow helped put Apollo on the moon**

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### **Second Report - November 1996**

This is the second report on my book on the accomplishments of the British and Canadians who worked in NASA in the 1960s after the cancellation of the Avro Arrow Program. If you have any comments, suggestions, or questions, please contact me at my address at the end of this report.

### **What's in a name? (part 2)**

Arrows to the Moon remains the tentative title of the book. Reaction to this title has been generally positive. Another idea for a title comes from a quote from Bryan Erb in a 1965 Toronto Star story on ex-Avro engineers at NASA, in which he called the Arrow's cancellation a "lucky disaster."

On the subject of a name for the group, Rod Rose writes: "I always referred to us as 'the Avro Group.' The 'AC Connection' was a preliminary title for my book -- if I ever write it! -- not a name for the group. Personally, I prefer to be known as the Avro Group because that title encompasses all of us, whereas the 'NASA Canadians' really only refers to about half of the group."

### **Work in 1995**

In May, 1995, I went to Ontario and interviewed Owen Maynard in Waterloo, and Stan Galezowski in Tecumseh, near Windsor. I also interviewed Bruce Aikenhead in Salmon Arm, B.C. I also visited Ottawa for research at the National Archives. In November, I went to Texas, where I visited the Apollo Archives at Rice University in Houston, and the branch of the National Archives in Fort Worth where the Mercury and Gemini papers are stored. I interviewed Peter Armitage, Dr. William Carpentier, Thomas Chambers, Dr. Owen Coons, Burton Cour-Palais, Bryan Erb, Dennis Fielder, Rod Rose and Leslie St. Leger.

### **Progress in 1996**

Much of the year I have spent transcribing tapes of interviews from my visit to Texas in November, 1995. Because of the many demands put on me at work, I have not made as much progress on this as I had hoped to, and so this work is continuing.

In June, I visited the Toronto area and interviewed Stanley Cohn at his home at Niagara-on-the-Lake (Stan and his wife Joyce have since moved to Oakville). I also attended the Convocation of the University of Toronto, where Owen Maynard received an honorary Doctor of Engineering degree. During this trip, I also interviewed Jim Floyd, vice president of engineering at Avro during the Arrow project.

In late September and early October, I visited the Washington D.C. area to conduct research at NASA Headquarters, the Langley Research Centre and Virginia Tech, where the papers of Bob Gilruth and Chris Kraft are now kept. I interviewed John Hodge in the suburbs of Washington, Robert Lindley in Annapolis, MD, and John Shoosmith in Williamsburg, VA.

In the coming months, I hope to see David Ewart, Richard Carley and George Watts in California, and Norman Farmer in Oregon. I still have to interview Frederick Matthews, who lives in Massachusetts, as well. Thanks to Jim Floyd, I have contacted Mario Pesando, a former Avro engineer who went to RCA and worked on the Saturn V.

## **Still searching**

I'm still looking for some of the Canadian and Anglo STG personnel who I don't yet have addresses for, including David N. Brown, Jack N. Cohen, George Harris, John K. Hughes, and John Meson.

I've got in touch with relatives of Jim Chamberlin, Joseph Farbridge, and Frank Chalmers. I still want to contact relatives of the late Eugene Duret, Carl Lindow, Leonard Packham, Tecwyn Roberts and Robert Vale. As well, I will be speaking to other NASA personnel who worked with many of the people I am writing about. I have spoken to Paul Purser and Chuck Mathews, and I hope to speak to others.

## **Author moves to Victoria**

Shortly after I returned from Washington this fall, and while I was preparing this report, I accepted a new job with the Government of B.C. in Victoria, B.C. Although I am starting this job now, my wife and I will not be moving to Victoria until early next year. I will inform you of my new address when we move.

## **Thanks for your help**

Thanks again to everyone who has helped me by sharing information or agreeing to an interview. Special thanks to those who showed me such wonderful hospitality on my research trips.

If you wish to contact me, I can be reached through the following means:

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### *Arrows to the Moon*

#### **How the engineers who created the Avro Arrow helped put Apollo on the moon**

##### **Third Report - January 1999**

Canada's biggest pool of engineering talent was assembled at Avro Canada in Malton, Ontario, to build the CF-105 Avro Arrow, then the most advanced supersonic fighter aircraft ever built. The group that designed and built the Arrow was broken up on February 20, 1959, when the government of Canada abruptly cancelled the Arrow project.

A select group of those brilliant engineers went to work for the U.S. space program, where they helped form the core of the brilliant team that took America to the moon. Now for the first time, their story will be told in *Arrows to the Moon*, which is now being written.

Here is the story of some of the 32 Avro engineers of Canadian and British origin who moved to the United States and went to work for NASA, the National Aeronautics and Space Administration.

Jim Chamberlin, who was the chief of technical design for the Arrow, went to NASA where he helped run the Mercury project, which sent the first Americans into space. Chamberlin then designed the Gemini spacecraft, which propelled the U.S. ahead of the Soviet Union in the space race of the 1960s. Chamberlin's bold proposal for Gemini stirred up a fierce technical debate that ended with the crucial decision that paved the way for Apollo's landing on the moon in 1969.

Owen Maynard came from Avro to NASA where he helped design the Lunar Module and later became chief engineer for Apollo. The sequence of missions drawn up by Maynard helped guide Apollo astronauts closer to their goal of a landing on the moon.

John Hodge was one of the original flight directors at Mission Control, along with Chris Kraft and Gene Kranz of Apollo 13 fame. Hodge returned to NASA in the 1980s to launch the Space Station program. Along with other Avro engineers such as Dennis Fielder, Tec Roberts and Fred Matthews, Hodge helped build Mission Control and the network of tracking stations that guided Mercury, Gemini, and Apollo.

Bruce Aikenhead returned to Canada after three years of training astronauts at NASA, and he became one of the pioneers of the Canadian space program. He worked on Gerry Bull's controversial cannon launcher, on Canadian satellites, the Canadarm and finally the Canadian Astronaut Program.

These are but a few of the stories that will be told in *Arrows to the Moon*.

Watch this page for news on the book.

## Still searching

I'm still looking for some of the former Avro-NASA engineers who I don't yet have addresses for, including David N. Brown, Jack N. Cohen, John K. Hughes, and John Meson.

I still hope to contact relatives of the late Eugene Duret, Carl Lindow, Leonard Packham, Tecwyn Roberts and Robert Vale.

As well, I would like to speak to ex-Avro engineers who later worked in the U.S. space program as members of contractor teams.

If you wish to contact me, I can be reached through the following means:

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The ongoing process of researching this book has been documented on this web page . Earlier reports are archived. [Report 1](#) and [Report 2](#) are still available by clicking on their respective links.

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