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On February 20, 1959, the Canadian government shut down the Avro Arrow jet interceptor program, putting thousands of workers in Canada's aerospace engineering talent out of work. Avro Canada engineers employed, working on several projects. These engineers sought new employment. Some remained in Canada, moving to the United States, some traveled to Great Britain and found employment with the Concorde SST. Most went to the United States. South of the border, a new organization called the National Aeronautics and Space Administration was charged with putting U.S. astronauts into space, and it was a new organization. Within 10 weeks of the demise of the Arrow, 25 Avro engineers were working with NASA. Within another six weeks, another six would join them later. Other Avro engineers found work with the aerospace industry.

A little more than 10 years later, US astronauts would stand on the surface of the Moon. This is one of the greatest stories of technology and exploration in human history.



**James Arthur Chamberlin, 1915-1981.** The former design engineer who went on to design the Gemini spacecraft and help NASA get men to the Moon. Project Manager Mercury, Designer and Project Technical Advisor and Troubleshooter for Bob Gilruth, MSC [NASA] Shuttle concepts.

James Arthur Chamberlin was one of the major figures in the aerospace industry in Canada, and one of the handful of people who have designed manned spacecraft. Born in Kamloops, B.C., on May 23, 1915.

In February, 1946, Chamberlin joined the engineering staff of Avro Canada Ltd., of Toronto. He was one of the top people at Avro Canada as chief aerodynamicist on the Avro C-102 Jetliner and the CF-105 interceptor. Both of these aircraft broke new ground for the aerospace industry.

By the time Avro moved into design and construction of the Avro Arrow in the mid 1950s, Chamberlin was Avro's chief of technology. The story of the Avro Arrow is well known. The twin-engine supersonic jet interceptor is considered the most advanced aircraft ever built. Even without the engines that were designed for it, the Arrow was capable of Mach 2.



In April, 1959, Chamberlin and two dozen other engineers recruited by the fledgling National Aeronautics and Space Administration in the United States. The Avro group, which eventually included 32 engineers, joined NASA's Space Task Group at the Langley Research Center in Hampton, Virginia. The group later moved to Houston, Texas, to become what is today the Johnson Space Center. Chamberlin soon became the lead engineer for Project Mercury, the first U.S. manned space program. He became the de facto project manager for Mercury and saw it through their manufacturing processes. He was also responsible for troubleshooting problems that cropped up during the early Mercury flights.

After he left Gemini in 1963, Chamberlin became one of the lead troubleshooters in Apollo. He helped solve problems with the command and service modules, the lunar module, the mobility unit used to walk on the moon, and the Saturn rockets. Before he left NASA, Chamberlin was involved in drawing up early design concepts for the Space Shuttle.



**Owen Eugene Maynard, 1924-2000.** The engineer from St. Louis, Missouri, quickly rose through the ranks to give life to the Apollo Lunar Module. He oversaw the engineering effort on Apollo.

NASA Space Task Force, Chief Engineering Designer of the Lunar Module.

More information to come.



**John Hodge, 1925-** began a distinguished career at NASA. He worked in the area of flight control at Langley Research Center and Johnson Space Center until 1970. In 1982 he became Director of the Space Station Task Force at NASA Headquarters. He then took on increasingly responsible positions dealing with the Space Shuttle program, with him being named Associate Administrator for Operations in 1986, and was also the Flight Director for the Gemini and Apollo programs.

**Rod Rose.** The British engineer who helped plan the Apollo program. He picked out the first prayer to be broadcast from space.

NASA responsibilities: Rockets, Mission Operations assistant, Apollo and Shuttle mission planning

More information to come. ■■



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