# JAMES C. FLOYD

*Putting Canada at the Forefront of Aerospace Technology*

**GREAT BRITAIN'S A.V. Roe Company (Avro) sent one of its bright young men in 1946 to join a new and small aircraft design team at its Malton, Ontario, plant. Little did Canada know at the time that it was getting an aircraft designer who not only would create the first commercial jet aircraft to fly in North America but would eventually assemble a team of brilliant aeronautical scientists, some of whom would later play a key role in America's *Apollo* project to put a man on the moon.**

When James C. Floyd arrived in Canada at age 31, he already had an impressive record in aircraft design. Born near Manchester, England, by his mid-twenties Floyd was working on the first drawings of what was to become the *Lancaster* bomber of World War II fame. By age 29, he was chief project engineer, working on advanced projects including the application of jet engine technology.

Avro Canada was established as a result of the impressive workmanship on the *Lancaster* bombers at the Victory Aircraft plant at Malton during the war. Avro Canada took over this plant and sent Floyd to head a design team to develop a 30- to 36-seat jet-powered passenger plane for Trans Canada Airlines, the forerunner of Air Canada. When TCA backed out of the project (admitting later that they did not want to be the first to introduce jet service) Avro concentrated on making the plane suitable for airlines in the USA and Europe, eager, following the war, to update their passenger fleets.

In August 1949, just two weeks after Britain's de Havilland *Comet* had flown in Great Britain to win the honour of being the world's first jet transport to fly, Floyd's Avro *C102 Jetliner* took off from Malton airport and, by the end of October, was well into its flight testing program. The test pilot described the plane as "a perfect lady."

Promotional flights into the United States took that country by storm. One flight to New York took 59 minutes – almost half the time for regular flights – and another from Toronto to Chicago and New York prompted an American radio commentator to observe, "The record books of commercial aviation ... have been shot to pieces by the performance of the Canadian-built Avro *Jetliner*." The Rochester *Democrat and Chronicle* observed editorially about the same flight, "This should give our nation a good healthful kick in its placidity."

As a result, USA's National Airlines showed interest in signing a contract and the United States Air Force allotted funds to purchase 20 *Jetliners* for military operations. The Canadian government, however, reacting in part to the outbreak of the Korean War in June 1950, cancelled the project in 1951 in order to concentrate on the *CF100* – an all-weather, long-range fighter aircraft required by the RCAF.

***Jim Floyd (left) with model of* Jetliner *in 1950 after being the first non-American to be awarded the prestigious and internationally renowned Wright Bros. Medal.* [Photo, courtesy Avro Aircraft]**
***Flown by chief test pilot Don Rogers, the Canadian* Jetliner *soars over New York City, April 18, 1950 – the first time that Americans had seen a jet passenger plane.* [Photo, courtesy Bob Halford]**


***The all-Canadian Avro Canada* CF100 Fighter. *Close to 700* CF100s *were built at Malton and ranged Canadian skies for well over a quarter of a century. It was also in NATO service with the Canadian squadrons in Europe and with the Belgian Air Force.* [Photo, courtesy Brian Blatherwick]**

In 1952, Avro attempted to revive international sales of the *Jetliner.* Howard Hughes of TWA became interested in purchasing a fleet of *Jetliners,* but negotiations were thwarted when C.D. Howe, cabinet minister responsible for aircraft production, hearing about this, bluntly wrote to Avro Canada that they were not to use the plant for the *Jetliner's* further development and ordered the *C102* "... to be moved out of any useful manufacturing space."

By1952, Floyd had become Avro's chief engineer in charge of all design, testing, research and experimental manufacture and had built up a growing team of experts to develop the *CF100* fighter aircraft which served the RCAF and NATO forces and which had been purchased by Belgium. The success of the *CF100* led to a 1953 RCAF specification for the development of a supersonic interceptor to destroy any enemy threat to the northern reaches of North America and this in turn gave birth to the *CF105* – the Avro *Arrow* project – one of the most advanced and ambitious military aircraft projects then being undertaken anywhere in the world.

While Jim Floyd plays down his part in the *Arrow* project by saying that it was produced "by a brilliant and highly sophisticated team of experts" and that his own role as vice-president of engineering was to "keep them all going in the same direction," historical records and honours suggest otherwise. In 1958, the Canadian Aeronautical Institute presented him with the J.D. McCurdy award, the citation reading in part, "The responsibility for the many decisions which had to be made in the design stages of such an aircraft rested to an unusually large degree on Mr. Floyd.... The quality of his technical judgment and of his infectious energy contributed to the speed with which the project has been carried through."

The first *Arrow* was produced by the end of 1957. When test flown in March 1958, it reached speeds in excess of 1,000mph. Over the next several months, five *Arrows* were completed. These flew at speeds around twice the speed of sound and caused great international interest. That October, Floyd was invited to give the prestigious British Commonwealth Lecture to the Royal Aeronautical Society in London, England, on the design and development of the *Arrow.*

But once again political considerations were to squelch Floyd's leadership role in Canadian aircraft development. In February 1959, Canadian Prime Minister John Diefenbaker announced the cancellation of the project, later ordering "all the aircraft, jigs and components,

drawings, reports, films and everything associated with the *Arrow* program ... to be destroyed." The 14,000 employees working on the project were laid off.

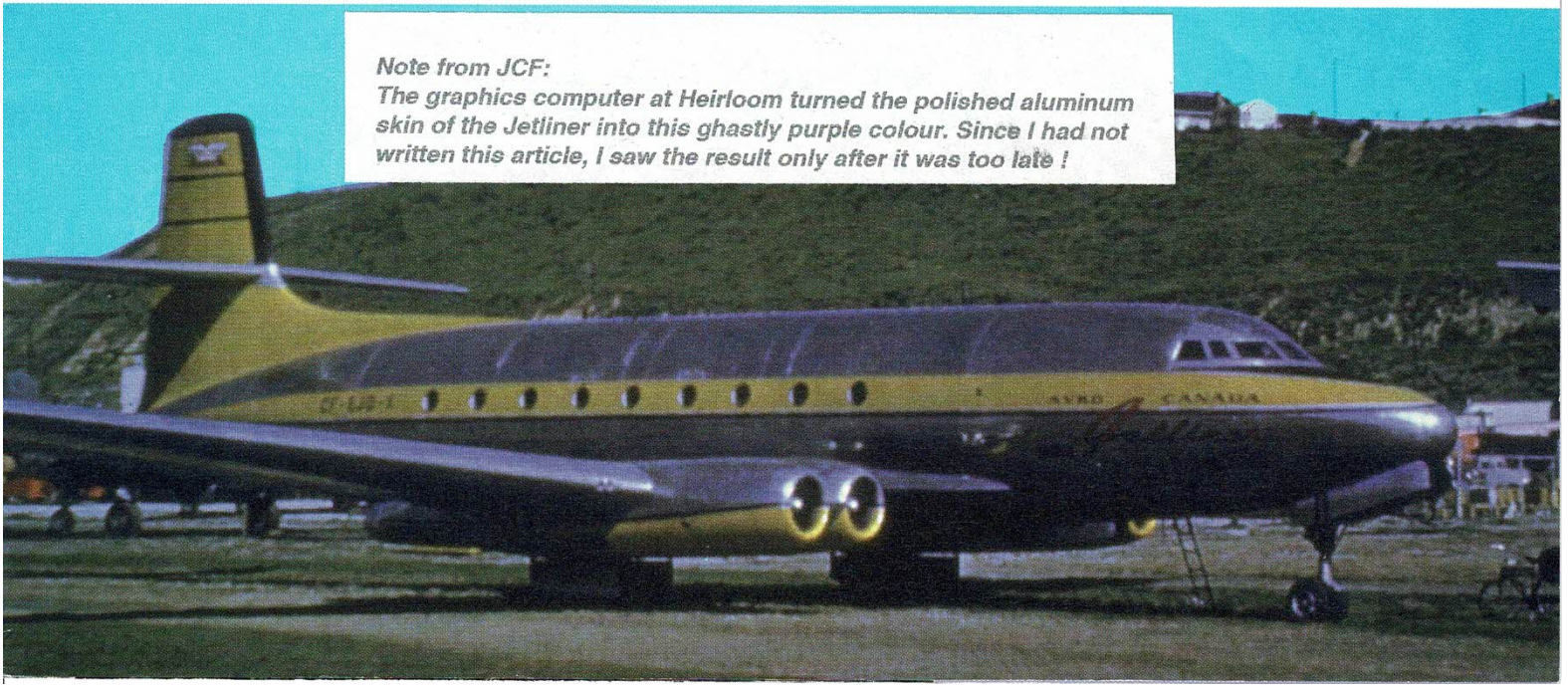
Floyd recalls that the cancellation of the project – and the break-up of the unique engineering team that had produced it – was devastating. Within weeks he was visiting many of the major aircraft companies in the USA to find work for his people. General Lauris Norstad, then head of NATO, described Floyd's group as "just about the best team that I have seen anywhere." Many from the team were placed with North American Aviation, Boeing, Douglas, Lockheed and other firms. Twenty-six of the Floyd group, led by Jim Chamberlin, described by Floyd as "a technical genius," joined the U.S. space agency as the result of an arrangement with NASA, to work on the *Mercury*, *Gemini* and later on the moon landings of *Apollo*.

The authors of *Apollo – the Race to the Moon* (1989) single out the work of these Canadians, writing, "As the Space Task Group's burden was threatening to overwhelm the entire project, the Canadian government unintentionally gave the American Space program its luckiest break since Wernher von Braun had surrendered to the Americans," adding that, while little public recognition was ever granted the Canadians, "their contribution was incalculable to the people within the programs." One of the group's top American engineers even claimed that the Canadians "had it all over us in many areas ... just brilliant guys ... bright as hell and talented and professional to a man."

"The same comments could have been said about many others that made their mark on the leading edge of technology in other countries, but were lost to Canada," Floyd laments. He turned down several lucrative job offers in the United States to accept an invitation from England to form a "think tank" to study advanced aviation technology and space vehicles, taking a number of ex-Avro Canada engineers with him. Their work also contributed to the development of the *Concorde*.

In 1961 he delivered a paper to the Royal Aeronautical Society on "Some Current Problems Facing The Aircraft Designer" that won him the Society's George Taylor Gold Medal for "its contribution to aeronautical science." The paper was so advanced that in 1988, 27 years later,

**Jetliner *at Howard Hughes airfield in Culver City, 1952. Hughes was interested in purchasing a fleet of 30* Jetliners *for his TWA regional routes.* [Photo, courtesy Don Rogers]**



*The Avro* Arrow *being rolled out on October 4, 1957, illustrating how big this all-Canadian aircraft was.* **[Photo, courtesy Avro Aircraft]**


*The* Arrow *in flight – beautiful but menacing to any potential intruder. On March 25, 1958, Jan Zurakowski became the first pilot to fly the famed* Arrow. **[Photo, courtesy Avro Aircraft]**

it was included in its entirety at the first World Conference on Hypersonic Flight in the 21st Century held at the University of North Dakota and sponsored by NASA and many other scientific organizations. One attendee, the honorary president of the Scientific Teachers Association of Ontario recalled, "My most vivid memory of the event was how revered Jim Floyd was in that company of experts. He was, in fact, the living symbol of the proud legacy this nation [Canada] has carved in aviation history." At the banquet given in Jim's honour at the conclusion of that conference, the chairman recalled that in 1950 Jim Floyd was the first non-American ever to receive the Wright Brothers Medal.

In 1962 Floyd established his own consulting firm and for 18 years worked with airlines and aviation companies worldwide (he was consultant to the British Ministry of Technology on the *Concorde* project from 1965 to 1973). He and his wife Irene, whom he had met when they were co-workers on the *Lancaster* bomber project in 1938, returned to Toronto after his retirement in 1980.

In 1986 Jim wrote a widely acclaimed book, *The Avro Canada C102 Jetliner.* In 1988 he was presented with a special award by the Aerospace Industries Association of Canada "in recognition of his service to the cause of aviation." He was named a Companion of the Order of Flight by the City of Edmonton in 1993, the same year that he was inducted into Canada's Aviation Hall of Fame. Now, in his eighties, he still passes on the stories of Canada's unique aviation heritage, particularly to young Canadians.

*Mel James*