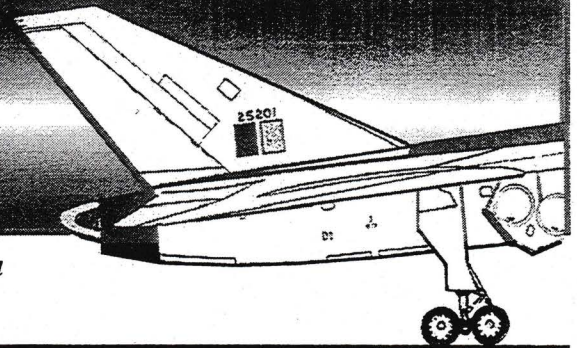


# Pre-Flight



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## The Delta-Winged Avro Arrow

by  
Gerry Barbour

*The following article is the first in a series on Canada's ill-fated supersonic interceptor, the Avro Arrow. It is written by Gerry Barbour, a name familiar to readers of Pre-Flight, for he has been a contributor to this newsletter in the past. Barbour shares his innermost feelings and perceptions about the demise of the Arrow. This is the way he saw the events then and now. His words are from the heart, written in his inimitable, readable style. He was there during those glory days, one of thousands who collectively produced this Canadian advanced aircraft.*

My writings are conspicuous by their absence of the Avro's Arrow, not when the Arrow, a top-of-the-line technical marvel met with such an ignominious end. No, not a crash, just a simple contract cancellation by a simple-minded, inept, ill-informed, newly-elected government, the Conservative Party of Canada headed by John Diefenbaker. This man was directly responsible for the breakup of the finest group of dedicated designers, engineers, draughtsmen, toolmakers, jig builders, test pilots in the free world. John Diefenbaker watched the southward trek of hundreds of Canadian citizens bent on continuing in their chosen profession, their interest in the field of aviation and did nothing to stop the flow. If the Government of Canada was not interested in keeping this group of highly skilled, highly paid, and therefore highly taxed individuals gainfully employed, the American aircraft companies certainly were. They arrived en masse on Avro's doorstep the Monday morning after the announcement of the cancellation, chequebook in hand, clamouring for the attention of the Avro personnel.



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## From the President

It is with sadness that I am informing our members of the untimely passing of Board Member, James Harvey. He was an ex-Orenda Engine employee and our representative on the board of Directors of the Toronto Aerospace Museum.

I have also just learned this morning, May 1st, of the death of James Calvert, a longtime member of AHFC and of the Board of Directors of the Toronto Aerospace Museum.

*Frank*

## The Delta-Winged Avro Arrow

**It was a sad loss to Canada.** This was a group whose skills had been honed by long association with aircraft of various types. People, who by their very nature, had succeeded in putting the CF-105 Avro Arrow front and centre in the unheard span of slightly over two years from the drawing stage until rollout of the pre-production aircraft, the famous RL-201. That's how good the dedicated workers of Avro Aircraft had become.

**Avro** had oodles of experience upon which to draw. From the pre-war Lysander, the pre-war Hampden bomber, the wartime Lancaster bomber, the Hurricane fighter, on down to the wonderful and highly successful Jetliner and the all-weather heavily armed CF-100 Canuck.

**These aircraft** had provided us with the skills to design anything, layout anything, build any tools, simplify the jig-making, and most importantly, speedily manufacture the airframe. Our brethren in the nearby Orenda Engine plant had already proven to the world just how good they were in the design and production of jet engines. Ever on the alert for knowledgeable people, added to staff was a collection of extremely bright individuals. We were confident we could do it all.

**Sure**, Avro had suffered a serious blow when forced to abandon the Jetliner transport through the bungling of the Honourable C.D. Howe. His concern over the production of the CF-100 led to his insistence that all Avro personnel turn their attention to that phase of our operations, even after being informed of several lucrative contracts in hand for the Jetliner.

**Sure**, Avro Aircraft had teething problems with its CF-100 Canuck, the all-weather fighter powered by our successful Orenda engine. Never before had Avro undertaken the design of such a complicated piece of machinery, engines, airframe, firing systems, ejection systems, the thousand and one things which made up this very versatile airplane.

**The problems** encountered and overcome were filed away and would prove invaluable in the production of what we all felt was the best high-flying, supersonic, all-weather fighting airplane yet devised. The Arrow was to have everything. Its newly designed Iroquois engine would propel it to Mach 1.5. Better still, it would be capable of higher speeds as Avro Aircraft continued to develop this wonderful machine.

**Altitude?** Not a problem. 50,000 feet would be a breeze. We expected the aircraft would be capable of 60,000 feet and more, eventually 100,000 feet in later models. ➡



**Its range?** The Royal Canadian Air Force (R.C.A.F.) asked for 650 miles at 50,000 feet subsonic. That is a long time for a fighter to be airborne. We on the floor heard plans were in the works to load up that beautiful high fin with fuel. Every pick of space on this aircraft was to be utilized.

**Its awesome firepower** combined with its ability to reach the highest altitudes flown by enemy bombers in a time measured in seconds, would deter any but the most foolhardy nation bent on doing harm to the North American Continent.

**"What** led to the inception of this superb flying machine and its purpose in the scheme of things? The question so often asked today is, "Why did Canada take on the design and manufacture of these highly technical fighting airplanes?" At the end of World War II, far-sighted, high-ranking R.C.A.F. officials had determined that Canada must assume the responsibility for its own defense.

**With the Cold War** now upon us, an attack by air was a very real possibility, even though North America was far removed from the traditional site of two massive world wars. Long-range bombers were now quite capable of hitting the North American Continent and the Soviet Union was known to be busily building such aircraft.

**The all-weather** twin-engine CF-100 Canuck was the first step in our defense. Even before our CF-100 had past its development stage and had become fully operational, those far-sighted R.C.A.F. officials had been working on a replacement. An all-weather twin-engine supersonic fighter would be the second step.

**In April** of 1953, the R.C.A.F. released the most stringent specifications ever laid down anywhere in the free world, for a new supersonic fighting airplane.

**The Brits** had been checked out for an airplane or airplanes that would meet these stringent specifications. Likewise, the United States. None were deemed suitable for Canada's unique weather patterns. Freeze your rear off one day and swelter the next. Not suitable for Canada's vast, lightly populated landmass. Avro Aircraft was certainly interested, as were other Canadian companies. Avro had already submitted proposals for advanced designs.

**Further studies** and submissions were made and finally permission was received for a design study on what would become the CF-105. Not only for the airframe but the weapons system, engines and fire control system. This new type aircraft was to be heavily armed, capable of meeting any attack from any source and be capable of flying at heights far in excess of any known bomber.

**Avro Aircraft** was now in the era of supersonic airplanes. We were familiar with a sonic boom. Test

pilot Jan Zurakowski had taken a CF-100 Canuck sky-high, nosed her over straight down, and put her through the sound barrier. The wings stayed on. Not bad for an airplane with a much-modified centre section. Not bad for a straightwinged airplane. The resulting shock wave shook me right down to my toes, the plant buildings, the aircraft personnel, the village of Malton and its citizens.

**The Arrow**, with its newly designed Iroquois engine, the most powerful jet engine in the world, twenty thousand pounds of thrust and equipped with afterburners, would be capable of reaching any high-flying bomber. They could run but they couldn't hide. When the alarm bells rang to scramble, to light up, to liftoff, swoosh, the Arrow would be at 'em. Pop a missile up their tailpipe. Boom! Mission accomplished. Let's get down, it's time for lunch. A tall order and one that would stretch our skills to the limit.

**Back** in the year 1945, in the dying days of WW II, there were some events taking place that helped shape the happenings in the world of aviation in the early fifties. With the armies of the Commonwealth and the United States advancing pell-mell from the west, and the troops of the Soviet Union zeroing in from the east, Berlin the capital city, was caught between the attacking forces. The race was on to capture Berlin. The Soviets won.

**It was only** a matter of time and the once mighty German war machine would grind to a halt. Germany would surrender unconditionally as the Allies were demanding. The commanders of the army from the east would meet with the commanders of the army from the west. They would shake hands, congratulate each other on a job well done, and commiserate on the brave men who had lost their lives for a glorious cause. With lingering smiles, they would set about assisting the shell-shocked German people, give them succour, get them back on the path to a democratic society. That would be the way to go. This didn't happen.

**Stepping back** further in time, to early 1943, representatives of the United States, Great Britain, China, and the Soviet Union, had gathered in Moscow for the express purpose of establishing an international organization whose sole aim would be the promotion of peace throughout the world. Never again would war engulf the world. The newspapers at the time were full of praise for these nations. What a marvelous idea! No more wars. No more slaughter of young lives. They met again, this time in the United States and decided on a name for their organization, the wonderful and high-sounding name, The United Nations. The idea caught the fancy of all and in 1945 representatives of fifty nations gathered in California, U.S.A. and drew up a charter which went into effect in December of that year.



## Arrow, cont'd

The United Nations was now a reality. From now on, all would be well. Peace would exist between the nations. Forever.

**But one nation** had abandoned those principles. One nation had other ideas. After the cessation of hostilities, the allies, who by their combined efforts had put an end to Adolph Hitler's dream of world domination, suddenly found their eastern ally, the Soviet Union had done an abrupt about-face. It was no longer an ally, but an ugly bear bent on spreading the doctrine of communism to every corner of the globe. This huge, powerful country now posed a real threat to all who believed in the democratic system.

**With the collapse** of Hitler's regime, a mad scramble began to grab the best scientific brains of Germany, a country that had produced fearsome implements of war. An Air Force unparalleled anywhere in the early stages of the war. They had airplanes such as the ME-109, the HE-162 jet fighter, the ME-262 jet fighter, the buzz bomb, the V2 rocket, the ME-163 rocket fighter, the ICBM, the Intercontinental Ballistic Missile. German scientists had already worked on the atom bomb but had to put that project on hold due to insufficient supplies of heavy water. These people were much in demand.

**We were** after them too. Better we should have them than a country bent on forcing its doctrines on any and all. However, the Soviets, ever the opportunists, ever ready to further their own aims, managed to grab, capture and persuade either by force, guile or brainwashing, their share of the German scientific hierarchy. They now had superb scientific brains at their disposal and they put them to work, willingly or otherwise, on engines of destruction. Suddenly, the threat of another world war was very real indeed.

**Late** in World War II, the allies, certain that victory lay within their grasp, had decided on a military occupation of Germany. The country would be divided into four zones with the United States, Great Britain, the Soviet Union and France each responsible for a zone and with all four powers jointly administering the capital city of Berlin, it living deep in the Soviet zone.

**The armed** forces of Germany would be disbanded. Those responsible for wartime atrocities would be placed on trial and punished. The country would gain a measure of economic stability and be able to support itself. Gradually, things would settle down and everyone could go home.

**But in place** of the sun rising in the East, a dark cloud arose. Soon, very soon, the Soviet Union began flexing its mighty muscles and stopped co-operating with its erstwhile allies. Bent on furthering the doctrines of communism, it blocked all efforts to reunite Germany.

**While the other** three nations gradually amalgamated the zones allocated to them in an effort to further economic stability, the Soviet Union steadfastly refused to join in this very worthwhile endeavour. Their zone became known as the East Bloc. They began a campaign to drive the Western powers from Berlin by blocking all routes to the city by air, water, and land. The West refused to budge. For more than a year, all aid in the form of food, fuel and other necessities were flown into Tempelhof Airport, the major airport of Berlin.

**The Soviets** declared the West was violating their airspace and actually shot down an airplane. That was provocation for a shooting war certainly, but wiser, saner heads prevailed. In May of 1949, the blockade was finally lifted. The airlift ended in September of that year. These were very uncertain and very scary times.

The more knowledgeable inhabitants of North America were feeling decidedly uneasy, especially me. In the newspapers. I followed the trials and tribulations of the leaders of the free world and realized just how nasty the Soviets had become. The "cold" war was now red hot.

**I did not sleep** well at all, and neither did our political leaders in Ottawa. Plans made their appearance in the papers detailing the construction of bomb shelters, sturdy enough to ward off the effects of conventional weapons and the blast, heaven forbid, of an atomic bomb.

**I was happy** to hear that our leaders were busy excavating, digging like badgers, a hidey-hole, so the affairs of state could go forward if an enemy was foolhardy enough to drop lethal weaponry on their heads while on the way to pulverize Washington D.C., U.S.A. (*Part 2 - next issue.*)

## Members Matter

*Yes, the Pre-Flight is late, the membership cards for 2008 as yet are not processed. I have been in Florida for the past couple of months. Prior to returning home, my wife and I were asked to stay on as the result of a medical emergency in our family.*

*Now that I am home, I will begin the processing of memberships for 2008. I thank you for your patience in this matter.*

*I have known James Harvey and James Calvert for many years, and have come to admire what they stood for and to what they have contributed during their lifetimes.*



**Nicholas Doran**, Membership