

RL 900-F  
JULY 2010

## ***Avro Arrow-The Iron Warrior***

Thesis: The Cancellation of the Avro Arrow was not the correct decision for Canada.

### **Brief History**

- Canadian aviation industry took off in WWII by producing Lancaster bombers for Britain
- A.V.Roe Company, from WWII productions, was split into Avro Aircraft and Orenda Engines in 1954
- Jetliner was the first major Avro project and first commercial aircraft to deliver mail
- Unfortunately Jetliner was cancelled due to the Korean War and the demand for CF-100 fighter planes
- The CF-100 fighter planes were the predecessors to the CF-105 which became the Avro Arrow

### **Avro Arrow Production**

- The Arrow, a long range twin-engine delta-winged supersonic interceptor, was begun on July 1953
- The aircraft was designed to defend Canada and the USA from USSR long range nuclear bombers and missiles
- Requirements for the Arrow: 600 nautical miles radius, mach 1.5 speeds, crew of 2, and 50 000 feet altitudes
- Testing/Study: 11 free flight models 1/80'h to 1/6'h of actual size were shot into air with Nike Rockets to simulate supersonic speeds. They eventually ended up in Lake Ontario and are possibly still there
- Wind tunnel testing was done in NRC Ottawa but Buffalo facilities had to be used for more advanced Testing
- October 4th 1957: Roll out, witnessed by 12 000 people. Unfortunately, Arrow became of secondary importance in the media because of 'Sputnik,' which was launched around same time
- After low speed and high speed taxi trials Arrow had its first flight at Toronto's Malton Airport, where it was built, at 9:51 am to 10:30am on March 25'h, 1958 with Jan Zurakowski as the test pilot
- 5 Avro Arrows were completed under the watch of the liberals led by Louis St. Laurent, financier of the program, and the conservatives, who cancelled it, under rule of John Diefenbaker
- The Avro Arrow was the most advanced aircraft of its time and was up to 20 to 30 years ahead of any existing aircraft

- Over 30 000 people worked on the Arrow including Jim Floyd (VP of Engineering), Jim Chamberlain (Chief Aerodynamicist) and Jan Zurakowski (Chief test pilot)
- The cost ranged from \$27 to \$260 million in 1955. Additional cost were added on for the Orenda Iroquois engines, Sparrow missile system, and the "fly by wire" system which was auto piloted

### **The Cancellation of the Avro Arrow**

- The Arrow was cancelled on 'Black Friday' 11am February 20,th 1959 because of high costs, suspected Russian spies, and the influence of the united states to take the BOMARC system instead
- Over 30 000 people lost their jobs and 14 000 were released that very afternoon
- Following the cancellation the aircrafts were violently torched and scrapped along with materials, tools, and any further design plans

### **The Avro Arrow of the Future**

- If the Avro Arrow project continued unhindered the Avro team planned to create aircrafts that were capable of Mach 4 and Mach 5 speeds as well as 100 000 feet altitudes
- Also foreign interest from USA, Britain, France, and NATO to buy the Avro Arrow would balance the high production costs

### **Essay Argument**

#### **Main Ideas** 1

- \* TS: Although some may argue that the cancellation of the Avro Arrow was a relief to Canadian tax payers, ultimately it crippled Canadian mentality and destroyed the Canadian spirit
- 1. Myths/misconceptions propagated by media created reverse Pygmalion mentality among Canadians
- 2. Canadians believe they can't compete as shown in the "Arctic Dispute" and Canada's meager efforts to enforce the borders against the USA and Russia
- 3. Cancellation caused 30 000 jobs to be lost, and brought a recursion of the Great Depression desperation portrayed in rumoured suicides and loss of faith in government as Diefenbaker lost next election
- \* TS: Despite the fact that individuals may argue that Canada was a completely independent nation, essentially the AVRO Arrow cancellation clearly portrayed how Canada was still greatly influenced and controlled by other countries, namely the United States, that were older and more powerful than her.

Signing of multiple treaties such as NATO (1949) and NORAD (May 1958) caused Canada to lose some sovereignty and become linked to the USA. NORAD put Canada under USSR threat since geographically she was in between USA and Russia, also most of Canadian defence was replaced by USA's own weaponry due to the NORAD agreement Building of DEW line in Canada put her under even more USA control and led to the eventual acceptance of the BOMARC missiles, even though they proved disastrous because Russians had electronic jamming technology and the missiles functioned on SAGE radar system

USA was too involved in the Avro Arrow project, they actually gave Avro the go ahead with the Avro design and sent Dr. Perkins, Chief Scientist of USAF, to set greater requirements for Avro Arrow

TS: It is debateable that the cancellation of the Avro Arrow was beneficial to USA however, it denied Canada the opportunity to become one of the top nations in the world through destruction of potential

1. Canada could have had the world record for speed and altitude in human history and could finally lead the world in something "it was a time when the eyes of the aviation world were on Canada."
2. All the great minds attracted from all over the world left to other countries such as, Britain, United States, France, and Holland, after the cancellation because they saw no future aviation projects in Canada
2. USA's NASA reaped the benefits of Avro Arrow in the Space Shuttle and Apollo programs by sending man to the moon. Imagine if that was Canada!

#### Fundamental Questions

Was the Avro Arrow necessary for Canadian defence or was it just an experiment?

Did the government have the right to completely destroy the Avro Arrow aircrafts and documents?

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NOTE: The only change to the above Thesis was the removal of two pictures because of space requirements.

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JAMES C. FLOYD

July 6th. 2010

Dear Misha,

My good friend Mr. Frank Harvey, President of the AHFC, sent me a copy of your excellent essay on the Avro Arrow project, which I understand you presented to your High School class earlier this month.

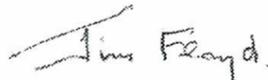
It is very gratifying to see the interest of so many young Canadians about a time when Canada was one of the World leaders in aviation technology.

I congratulate you on choosing the Arrow project for your essay. You obviously did a lot of research on the history of the project and did a remarkable job of putting things into perspective, especially assuming that as a Grade 10 student you were writing about a period in Canadian aviation which occurred more than half a century before you were born !

I am sending you a few ' bits and pieces ' on Avro Canada history which you might find of interest. Incidentally, I have taken the liberty of marking up a few errors on a copy of your essay. I have to tell you that there were less errors in your excellent write-up than I have seen in many so-called historians efforts !!

Wishing you success in whatever you decide to do and have a great life.

Yours sincerely,



Jim Floyd

Former VP and Director of Engineering Avro Aircraft.