

THIS IS A COPY OF MY  
MEMORY-SHEETS, AS  
PROMISED, FOR THE TALENT  
SINCE THE BAG-PIPE BAND  
WERE 'SWIRLING THEIR KILTS'  
TO TRY TO GET TO THE  
ACTUAL 'CURTAINS-OPEN  
ARROW REVEALED' PART.  
I CUT MY TALK A BIT  
SHORTER THAN TYPED, BUT  
THE MESSAGE WAS THE  
SAME. GOD BLESS - Jim

I think the question I get most, at least from our younger Canadians, is "Was the Arrow really as good as everyone says it was and how would it compare with present day aircraft". A good question and I'll try to answer it.

Well, I guess the Arrow was many things to many people, but to me it was not just one aircraft, the Arrow project was a family of aircraft starting with the Mk 1 Arrow which is represented by this great replica. The five Mk 1 aircraft had flown up to speeds approaching twice the speed of sound ( about 1320 mph at 50,000ft ). The Mk 2 aircraft with the higher powered and lighter Iroquois engines was almost ready to fly when the whole project was cancelled. That aircraft would certainly have broken the world speed record and was capable of speeds up to at least 2.5 times the speed of sound or around 1,650 mph ,which was the maximum speed that the aluminum structure allowed. Incidentally, about 95% of the parts for the first batch of 37 Arrows under initial contract had been completed at the time of cancellation. We had also been discussing a Mk2A longer range version with the RCAF.

Beyond the Mk2 we were working on a Mk3 Arrow which would have been capable of speeds up to 3 times the speed of sound or around 2,000mph. The Mk 3 would have looked similar to a Mk 2, but with different air intakes with variable geometry. It would also have had special skin insulation to allow for the higher temperatures at that speed, since the aluminum structure needs protection at those speeds, which can generate temps. of around 500 F in some parts of the structure.

Beyond the Mk 3 we had a longer range version , which we called the Mk 4. The main difference between these two Mk's. would have been the higher weight of the Mk4 which would have required a stronger landing gear. We had also started studies on a reconnaissance version, an anti-ICBM Missile launcher and a bomber version with a half scale Blue Steel bomb half buried in the armament bay. That version would have been for export only, since Canada's airforce was orientated around defence.

So that would have been our Arrow family, and this replica is of the Mk 1 'mother' aircraft. Could Canada have afforded that kind of a package ?, probably not, but I'll come to the export potential later.

Next question- How does the Arrow compare with present day aircraft?

Well, we received the specification on the Arrow 53 years ago in 1953 and some things have certainly happened in the aviation business in that time. For instance , some years after the Arrow the SR 71 reconnaissance aircraft was cruising at 3 times the speed of sound----and later still the F22 Raptor is even more manoeuvrable than the Arrow because of the new technology in its vectored thrust variable angle jet nozzle. The Joint-Strike-Fighter programs are also producing some interesting aircraft and the Russian Sukoi SU-30K also has phenomenal manoeuvrability, and so on !

But having said all that, I know of no fighter today that could fully meet the RCAF operational requirement for the Arrow, laid down as I say 53 years ago with the combined emphasis on high speed----high manoeuvrability at high altitude---a massive package of large missiles, which we had to carry internally to meet the requirement,--- coupled with the ability to land and take off from the short runways then available. But the Arrows that flew were meeting all of those requirements ! The no-nonsense RCAF evaluation pilot Jack Woodman who had flown 201, 202 and 203 extensively reported and I quote from his report-- “ Approximately 95% of the flight envelope was investigated and from where I sat the Arrow was performing as predicted and meeting all guarantees”.

To give you some idea of the problems we faced to achieve that performance, on the Mk2 Arrow we had to go close to a 1 to 1 power-to-weight ratio, with the two Iroquois engines generating around 52,000 lb of thrust on a 60,000 lb aircraft. We had to go to what I believe was the first 4000psi hydraulic system in a service aircraft in order to be able to house the powerful control actuators in the very thin wing. We also had to go to sophisticated fly-by-wire controls with stability augmentation, tied in with the complex Fire Control System and the Arrow had many other innovations, most of which were beyond-the-state-of-the-art at that time.--over half a century ago.

We also had no time to build prototype aircraft and flight test them on a ‘suck-it-and-see’ basis to iron out any bugs which would be fixed on the production line. All the Arrows were built on hard production tooling from the start and we just had to be right first time. ---I can tell you that was an engineer’s night-mare !! But we did it and the Arrows were meeting the incredible requirements laid down by the RCAF.



So, why did the RCAF lay down such a difficult and beyond-the-state-of-the-art performance requirement? --- Well-- those of you who are old enough will remember that the Cold War seemed to be getting ready to boil over and the military planners considered the possibility that Soviet supersonic bombers might be coming over the Northern reaches of Canada to attack targets in North America and the Arrow specification was written around that scenario.

Some of the self-styled Revisionist Historians argue that since no supersonic bombers ever flew in anger over the Canadian North, the Arrow requirement was overkill and such an advanced aircraft was never necessary. Well Avro didn't write the spec. We simply gave the RCAF what they asked for. The argument of the naysayers is a bit like saying that you should never prepare for a catastrophe that may never happen. Try taking out an insurance policy on your house while it's burning down !!

Anyway, whatever the pros. and cons. of the RCAF requirement, the end result was this fantastic airplane, which both the British and Americans admitted was way ahead of anything they had in their own military inventory..

Canada, at that time was considered to be one of the world leaders in high performance aircraft. I was invited to present the British Commonwealth Lecture on the Arrow to the Royal Aeronautical Society in London England in 1958, since the Brits considered our aircraft to be way beyond the state of the art at that time and were interested to hear about it. Incidentally, after my lecture, the papers and aviation magazines in the UK were discussing it and coming out in favour of the RAF getting the Arrow since they were writing a requirement for a new fighter and the Mk 3 Arrow would certainly have filled that requirement.

The projects coming out of Avro Canada at that time were due to the efforts of a wonderful team of dedicated and enthusiastic designers, builders and pilots. I have to tell you that in my 92 years on the Planet, 50 of them spent in the International aerospace industry, I have never known a team of people as dedicated, professional and enthusiastic as that wonderful group at Avro Canada.

Incidentally, about 20 years ago, David Onley and I were involved in an encounter with the media icon Dini Petty, arranged by David and Spar

Aerospace. The interview was supposed to be about my new book on the Jetliner which had just been published, but we soon got around to her questions on the Arrow developments and the other advanced studies that we were doing in the late 50s on supersonic transports, space vehicles and advance versions of the Arrow. But the thing about that interview that has stuck in my mind all these years was David's description of my engineering team as " a critical mass of brain power that could have tackled anything " I believe that says it all. That team was unique in the aviation industry worldwide, proven by what they went on to do after Black Friday.-----So much for memories !

When we look at this great full-scale museum-quality replica of the Arrow, which shows just how big, beautiful and advanced the Arrow was, we have to congratulate Claude Sherwood's dedicated crew of volunteers who have given us this powerful reminder of a time when Canada had the tiger by the tail in aviation. You all deserve medals. ---

If there is a sad part to this event it's the fact that so many of my senior engineers have now put on their gossamer wings and flown off the planet and all of the pilots that flew the Arrow have done the same including our Chief Test Pilot Don Rogers, who led the flight group but never got the chance to fly the Arrow. I'm particularly sad that my old friend Zura didn't live to see this beautiful replica of his favourite airplane. It makes me feel very lucky and privileged to be here with you tonight, but then , as I've said before, at my age I'm lucky to be anywhere tonight.

Before I close I'd like to make a suggestion--- that from here on we re-christen this replica as the TAM Memorial Arrow, since it's a symbol of what dedicated Canadians can achieve with their hearts, minds and muscle when confronted with an almost impossible task, and that goes for both the team at Avro Canada and the team at TAM that gave us this great memorial.

Tim Floyd.  
Oct. 5th/2006