



Air Marshal W. A. Curtis

Curtis Places

Production facilities seen critical

RCAF's 'Buy Canadian' procurement

If the Royal Canadian Air Force is to be equipped with the type of aircraft necessary for our specific needs, in time to be used for effective defense, the planes must be designed, developed and produced in Canada.

In brief, from the defense strategy point of view, this is the answer of a former Chief of the Air Staff to critics of Canadian policy in aircraft procurement.

Into the bargain, Air Marshal W. A. Curtis, RCAF (Retired), points out, the defense planners' "Buy Canadian" policy has:

Saved Canada's taxpayers "millions of dollars" according to comparisons of actual production costs for Canadian, United States and British manufacturers;

Built up an industry which employs thousands of Canadians;

Brought millions of dollars in export business to Canada.

Now Vice-Chairman of the Board of A. V. Roe Canada Ltd., Air Marshal Curtis presented his case in a recent address to the RCAF Benevolent Association in Ottawa. The former senior RCAF officer drew on his experience during World War II with procurement of aircraft and the post-war search for equipment to suit Canada's peculiar requirements in "setting the record straight" against recent "uninformed criticism."

Hard Lesson

The hard lesson of the Second World War, AM Curtis declares, "was that our air force must never again be dependent upon sources outside our own borders for first line aircraft."

Because Canada was not producing its own operational aircraft during the Second World War, "we had no con-

trol over their allocation." The result was that in the early days of the fighting, Canadian squadrons operating overseas were "low on the list for equipping or re-equipping with the latest types."

It took a lot of negotiation to overcome this difficulty.

Even when operational aircraft began to be turned out in Canada under license, the Air Marshal recalls, the problem was not solved. On one occasion, Canadian-built Hurricanes which defense officials here felt were sorely needed by home-based squadrons to meet a Japanese build-up in the Aleutians were allocated to Russia.

The one consoling thought, he continues, was provided by the chairman of the group which made the allocation. If the Japs really became a threat to Canadian territory, he told AM Curtis after the meeting, Canada's then Air Minister would take the Hurricanes for the RCAF regardless of their allocation.

"To me," says AM Curtis today, "it meant that if Canada wants its air force to be equipped with the most modern and most suitable aircraft for our special needs, then we must build them ourselves.

"We cannot expect the U. K. or the U. S., even if they are building what we want, to make suitable aircraft available to us, either in peace or war, until their own squadrons are equipped.

"In this day and age, this will be too late."

Special Design

Having laid the ground work for at least production of the required aircraft in Canada, the Air Marshal deals with the question of Canadian design

and development. Why not licensed production on a proven type?

Following the war, "our air force, looking to the future, decided they had to have a special two-place, twin-engine, all-weather interceptor which would be able to operate day and night and which would have an exceptionally long range capability.

"I was the leader of a special team of RCAF officers who visited aircraft factories in the U. S. and the U. K. looking for such an aircraft. We couldn't find one that met all our requirements. Nor was there one on the drawing boards.

"It became obvious that if our air force was to have the kind of aircraft the planners said it needed, then we would have to design it ourselves. That is precisely how the CF-100 was born."

All evidence is that this was a correct decision, says Air Marshal Curtis. If it had not been taken Canada would have had a much less effective air defense system.

Competent military authorities have stated repeatedly that the CF-100 was the finest aircraft of its type in operational service.

The decision is further supported by the fact that besides being in service in Canada, the CF-100 is also in service with the RCAF Air Division in NATO and was chosen in keen competition with other types by the Belgian Air Force to equip their all-weather squadrons.

"If the money spent on this aircraft was 'money down the drain,'" Air Marshal Curtis observes, "somebody should tell the Belgians. They bought \$50,000,000 worth. A nice tidy piece of export business for Canada."

Arrow Program in Perspective

to provision of operational equipment adequate for effective defense policy has saved tax dollars, built up an industry employing thousands

The same reasoning applies, but to an even greater degree, with respect to the decision to proceed with design and development of the CF-105 Arrow.

"No other aircraft in being or being planned met the requirement of our air force," says AM Curtis.

"As for its performance, it has been remarkably successful in its first flights. It has exceeded 1,000 miles an hour by a substantial margin.

"I have no hesitation in saying that

both these projects (the CF-100 and the CF-105) represent outstanding military and technical achievement in a very exacting field. This also applies to the Canadian designed Orenda jet engine and its successor, the Iroquois."

What about costs.

"The CF-100 and the Orenda jet engine," Air Marshal Curtis says, "have been delivered to the RCAF for considerably less than it would have cost for comparable but inferior equipment built elsewhere.

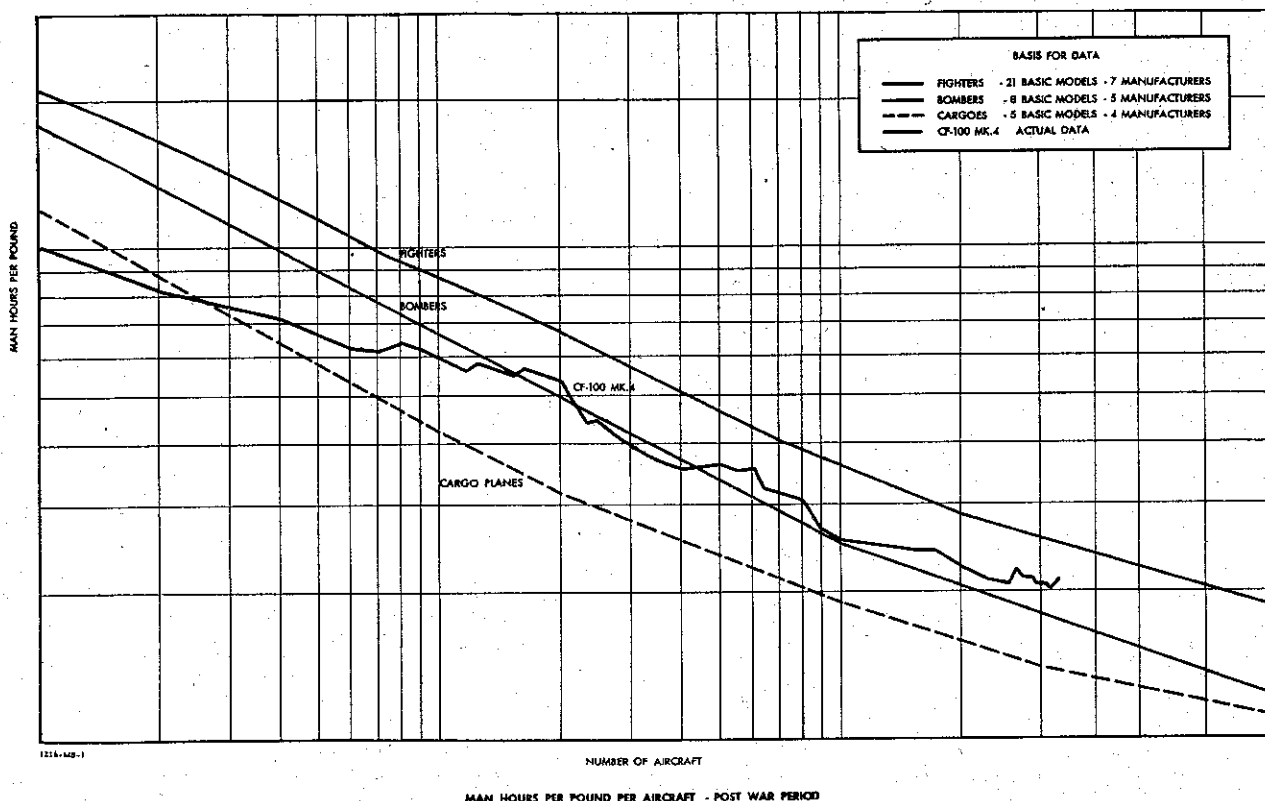
"The saving to the Canadian taxpayer runs into the millions."

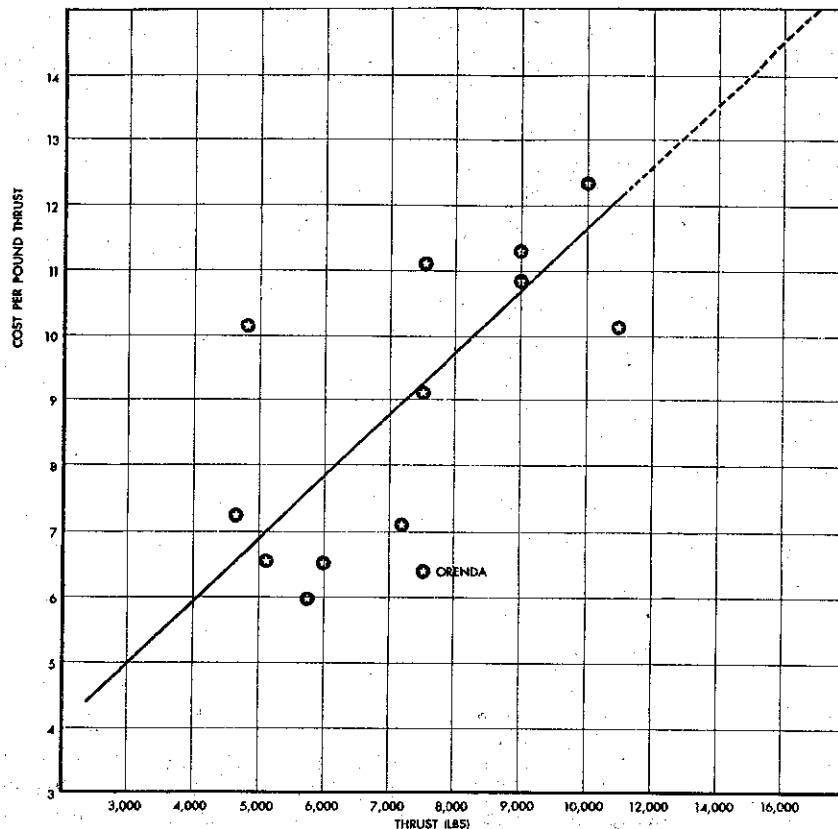
The Air Marshal invites a detailed examination of "the \$200,000,000 figure that is being loosely used in connection with the cost of the Arrow."

\$200,000,000?

The impression has been left that this single machine cost \$200,000,000.

"I don't know where this figure came from," says the Air Marshal, "and I am not at liberty to divulge the





COST COMPARISON OF JET ENGINES - U.S.A., U.K. AND CANADA

THRUST PER DOLLAR. A comparison on the basis of total cost to pounds of thrust shows Orenda Engines Ltd. Orenda turbojet to have been turned out at a cost below that for engines of comparable power developed in the U. S. and Britain*.

exact amount that has been expended on the program to date. But I can say that the impression that has been created in wholly erroneous.

"As far as the airframe itself is concerned, the only figure I can give you is the one mentioned by the Minister of National Defense in the House of Commons last November.

"He said Avro Aircraft Ltd. had been paid \$89,000,000 up to that time. I should add this does not include the cost of the Iroquois, the fire control system, etc.

"However the most insidious thing is not the figure itself, but the implication that this is what the first aircraft cost.

"This is quite wrong.

"The funds that have been authorized and expended so far cover many things.

"You all know about the first aircraft. But what isn't generally known is that the second one is already off the production line and in flight test. It will fly shortly. The third is due in flight test in a week or so (has now

arrived) and the fourth in 30 days. The fifth is nearing completion on the line and behind it are others.

"Another thing to remember... the design has been under way for four years.

"First scores, then hundreds and now two or three thousand people have been at work — engineers, technicians and production workers.

"There have been extensive and costly test programs.

"This great amount of work has not been confined to Malton. It has been going on in factories and laboratories in many places in Canada. Only part of the money that has been spent has gone directly to Avro. The rest has gone to hundreds of sub-contractors and suppliers.

"Then there is the matter of production tooling. The cost of this has also come out of the funds that have been advanced. This equipment is even now producing Arrows and is there ready to produce as many as the government orders.

"All this design and development, all the production of complete aircraft and thousands of components, all the production tooling, all the very expensive and necessary testing; the cost of all these things has been paid out of the funds that have been approved.

"The whole program is an expensive

one. But a completely erroneous impression has been created which led you to believe that it is even more expensive than is the case."

The Air Marshal goes on to examine another aspect relating to the amount of money allocated so far to the Arrow program.

Economic Impact

"Doing this work in Canada has and is giving employment to thousands of Canadians. The impact of all this on the economy cannot be calculated. But it must be quite substantial if you only consider that Avro and Orenda between them have over 2,500 suppliers and sub-contractors from coast to coast.

"These thousands of employees and the companies that employ them all pay income tax, all of which helps indirectly to reduce the cost of the things they produce.

"Further, money spent in Canada helps our own industrial growth. If you bought aircraft and engines outside, the money would be lost to us and would help build the industry of some other nation.

"Another of the many advantages of having our own aircraft industry is that it provides opportunities for hundreds of young engineers who used to have to go elsewhere to make their careers. The flow of our best brains to the U. S. has been slowed from a flood to a trickle."

Defense procurement policy, the Air Marshal says, has created a whole new industry in the case of development of jet engines.

"This has not only given us a vital source of supply. It has also created thousands of new jobs and increased the level of our technical know-how and capability in the fields of metallurgy and power.

"We now have engineering and manufacturing techniques and facilities in this field that never existed before."

Here again, the Air Marshal stresses the export market created.

"Our process for making titanium blades for jet engines is well ahead of the field. We have sold some \$2,000,000 worth to U.S. engine manufacturers. Curtiss-Wright has contracted for the rights to build our Iroquois."

Arrow Obsolete?

Dealing with charges that the CF-105 Arrow is obsolete now, even before it goes into operational service, Air Marshal Curtis points out that such a claim is based on the type of reasoning which if carried to its illogical conclusion would preclude production on any type of aircraft.

"We would postpone making any-

(Continued on page 96)

* This chart was prepared by A. V. Roe Canada Ltd. and included in the brief which the firm's President and General Manager, Crawford Gordon Jr., presented to the Gordon Royal Commission on Canada's Economic Prospects.

BRITISH COLUMBIA

the KEY to WESTERN AVIATION

The expansion of aviation in British Columbia closely parallels British Columbia's economic growth and development.

- Vancouver International Airport has more landings and take-offs per year than any other Canadian Airport.
- 5 major airlines operate out of British Columbia, while more than 40 airlines have landing rights.
- Direct Airline routes link British Columbia with the rest of Canada, the United States, Mexico, Hawaii, Europe, Japan, New Zealand and Australia.
- British Columbia's continually expanding Aviation Industry offers facilities for all phases of aircraft maintenance.



THE GOVERNMENT OF
THE PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF
**Industrial Development,
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PARLIAMENT BLDGS.

VICTORIA, B.C.

Arrow in Perspective

(Continued from page 36)

thing because something better will, in time, be coming along. We would never have any defense weapons.

"We know that the Russians have been working on a Mach 2 bomber. The Arrow is designed to meet that kind of threat. As long as such a threat exists, there will be a requirement for an aircraft like the Arrow.

"To say that such an aircraft is obsolete, in view of the existence of this threat, is nonsense."

Turning to the manned interceptors vs. missiles controversy, Air Marshal Curtis quoted a number of experts to the effect that high performance aircraft still have an important role to play and will have for some time.

"My point is not that we should ignore missiles. Far from it. Rather that we should not be blinded by them, and misled into action which could very well put us in jeopardy."

The peacetime role of the RCAF, Air Marshal Curtis explains, presents another important aspect.

"Today, the RCAF is required to make at least two or three interceptions a day to identify aircraft approaching from a northerly direction.

"Only a manned fighter can go up, intercept, identify, and if the other aircraft is friendly, turn away."

Concluding his case, Air Marshal Curtis stresses that complexity of modern defense problems defies a single answer.

"The rate of development in the aviation field has been so great and so rapid that it has become easy for critics to fasten on one aspect of the problem at the expense of all other factors.

"Complete assessment of the whole field and all factors is the responsibility of the joint planning committee — Army, Navy, Air Force and Defense Research Board—who have available to them all pertinent information. The consideration and ultimate decision is the responsibility of the Chiefs of Staff Committee and finally the Cabinet.

"I would suggest that this competent and informed body of opinion is in a better position than any layman to decide on the best and most economical means of defending our country.

"Not only has our aircraft policy, in my opinion, given us the best defense we could possibly have and an air force second to none—a better equipped air force for its size than any other—but it has also given us an aircraft and an engine industry which is an air force necessity."

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DC3 Landing gear doors
DC3 Retractable tail wheel
DC3 Short tail pipes
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DC3 One piece birdproof windshields
DC3 Picture windows
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DC3 Fire detectors and extinguishers
DC3 Fuel flow meters
DC3 Brakes
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DC3 Deicers
DC3 Spare Surfaces, wings, controls
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