For the sake of argument

CRAWFORD GORDON CONTENDS

We should and will go on building Arrows

Various publications, individuals and self-appointed experts of many kinds have recently been conducting burial ceremonies for one of the most advanced military and scientific undertakings in the history of the Canadian nation; namely, the program for the development and construction in Canada of manned interceptor aircraft for the defense of North America. In their eagerness to see this admittedly costly (though essential) program abandoned, these critics have maintained that it already *has been* abandoned; and if by any chance it has not been abandoned, they contend it should be abandoned because, according to their dicta, it is already obsolete.

Bomber is main threat

Maclean's Magazine has been among the prominent and vocal supporters of these theories. It is with the utmost faith in the judgment of those who will ultimately settle the questions at stake—that is, the responsible Canadian political and military leaders supported by an informed public—that I have accepted the editor's invitation to tell the readers of Maclean's why I am convinced that the Arrow *has not* been "junked," nor is the Arrow obsolete.

The day of the manned interceptor is NOT over. The missile age is coming but it is not here yet. The main threat is still the bomber and will be for a long time to come.

The United States department of defense is NOT "jubilant" over these premature and erroneous conclusions that the Arrow has been abandoned in favor of the Bomarc ground-to-air missile.

The Bomarc is NOT a substitute for the manned interceptor; it complements it. Nor is it a defense against the inter-continental ballistic missile.

The Arrow will NOT cost twice as much to produce as buying an American substitute. Before going into detail on the important matter of cost, the actual status of the Arrow and Iroquois programs needs to be clarified.

The best way is to refer to the prime minister's own statement. It said the final decision would be postponed until after March 31 when the program would be reviewed in the light of all the circumstances existing at that time. In spite of the conclusions arrived at by Maclean's and large sections of the press, I accept that statement on its face value. So do the prime contractors, Avro Aircraft and Orenda Engines, and their six hundred suppliers and sub-contractors. The present program calls for thirty-seven aircraft and an appropriate number of engines. It is continuing with the utmost despatch. Four aircraft have already flown—all in excess of a thousand miles an hour. One has flown close to Mach 2, or twice the speed of sound. Ten will have been completed by March 31 and the balance will be in various stages of manufacture.

Far more important, however, is the need to correct the misconception that has arisen as to the respective roles of the manned interceptor and a fixed-base, ground-to-air missile such as the Bomarc. It is not a matter of one or the other.

The Bomarc is a pilotless missile designed to operate in conjunction with manned interceptors to intercept bombers, which will be the main threat for some years to come. Despite all that is being written about the ICBM, the Soviet Union is still adding to its already large force of bombers. The Bomarc does not, nor was it designed to, provide defense against the ICBM. This is the job of the anti-missile missile. Nobody knows when this will be available.

The manned interceptor provides flexibility. It can range out to meet the threat.

Only it can perform the essential function of identification. What is equally important to understand is that it carries a number of air-to-air missiles which can just as readily be armed with nuclear warheads as the fixed-base missile. In effect, the supersonic manned interceptor is an air-borne missile launching platform. It has a multi-shot capability and can return to its base to fly again and again.

The Bomarc-type missile on the other hand provides necessary last-ditch area and point defense for areas that must be protected at all cost. But it cannot choose between friend and foe and it can only be used once. Whether it hits its target or misses it is gone forever. It is also highly vulnerable to what military people call E.C.M.—Electric Counter Measures; or jamming. In other words, its electronic guidance system can be misled into blindly following a false trail. The manned interceptor is not so easily deceived. The men in it add human intelligence and judgment to the miracle of electronics, making possible a change in plans to offset enemy counter measures.

These complementary roles are borne out by established NORAD policy for North American air defense, which provides for a mixed force of manned and unmanned interceptors.

On October 23 last, Air Marshal C. R. Slemon, deputy commander-in-chief, NORAD, and former chief of staff, Royal Canadian Air Force, told the Canadian Industrial Preparedness Association in Montreal: "It is a safe forecast . . . that an aggressor's offensive air strategy is unlikely to rely on ballistic missiles alone for a considerable number of years. This situation forces us to maintain and improve our air defense system to cope with the manned-bomber threat, and to employ manned interceptors in our system for as long as the manned bomber is part of the threat . . ."

On September 30, Donald Quarles, the U. S. deputy secretary of defense, in a

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published letter to Representative Daniel Flood, said the North American defense system was based on "The theory of defense in depth with the warnings system, the communications networks, SAGE and the weapons systems, including manned interceptors, unmanned interceptors and ground-to-air-missile systems."

The Hon. James H. Douglas, secretary of the United States Air Force, speaking on September 27 at the annual meeting of the Air Force Association, said: "I believe Soviet statements that a new long-range bomber has been flown. This development, of course, emphasizes the importance of our own advanced bomber programs and of our long-range-interceptor and air-defense-missile programs."

W. M. Holaday, director of guided missiles for the U. S. department of defense, is emphatic about the continued need for manned interceptors. Also in a letter to Representative Flood, he said: "The U. S. needs long-range manned interceptor aircraft to obtain early attrition on enemy raids and to assist in the identification problem. The manned interceptors are backed up with the somewhat shorter-range Bomarcs."

General Thomas D. White, chief of staff of the United States Air Force, in a statement made last August, said: ". . . the ultimate in air defense would be to destroy the enemy forces immediately after they have been launched, or at least as far away from the target as possible. To do this we need very-long-range missiles and very-long-range interceptors."

Even Boeing, the company that is developing the Bomarc, says: "The unmanned military aircraft (the Bomarc) does not supplant the manned aircraft. No missile is yet capable of judgment or reasoning."

On November 3 in Quebec City, General Orval R. Cook, president of the American Aircraft Industries Association and formerly deputy commander, USAF, European Command, said: "There is a somewhat decreasing requirement for the number of aircraft because of the very high performance and the tremendous destructive potential of each unit. There is not, however, a plan of which I am aware, to phase out manned aircraft in favor of automatic weapons . . ."

Further evidence of the continued need for the manned interceptor is the fact that the USAF has under development a manned interceptor which is scheduled to come into service after the period for which the Arrow was designed. In an address in Dallas, September 27, 1958, Lt.-Gen. C. S. Irvine, deputy general chief of staff, materiel, USAF, declared: "We have programmed a new long-range fighter, the F-108. This will be an aircraft that will cruise continuously at altitudes higher than our present fighters at very high speed."

So much for the need for the manned interceptor in the foreseeable future. Augmented by ground-to-air missiles, it will continue to be an essential part of the North American defense system, which includes Canada, for some years to come. Canada can continue to do its part of the job with the Arrow or an alternative, or we can turn our responsibility over to the Americans. I do not believe the latter would be acceptable because it would mean loss of sovereignty and independence. I doubt that Canadians would relish the idea of having USAF squadrons taking over from the RCAF here in our own country.

If these military views are accepted and if the RCAF is to continue its partnership in NORAD, the question is reduced to: which aircraft should be supplied the RCAF? There is only one answer: the one that best meets the RCAF requirements in the period under consideration. Only the Arrow does this. In his September 23 statement, the prime minister said the Arrow and the Iroquois appear likely to be better than any alternative expected to be ready by 1961. He also said, "The Arrow has already thrilled us with its performance, its promise and its proof of ability in design and technology."

This should not be surprising. The Arrow is the Air Force's own aircraft. It was designed to meet the RCAF's specific requirements. On its performance so far, it has exceeded all expectations.

This, along with the weight and space savings resulting from the change in the fire-control system and armament, have materially increased its margin of superiority over other manned interceptors available in the time period.

Having established the Arrow's superiority from a military point of view, the next major consideration is its cost. The figure of nine million dollars per aircraft has been mentioned as the cost of building a hundred planes. This figure includes certain development and tooling costs.

However, what we are now concerned with is the cost from this point on of procuring a supersonic interceptor. It is the outlay ahead that matters, whether we build the Arrow or buy or build an American-designed aircraft.

The realistic approach is to eliminate what has been spent and consider only those costs which would be incurred from now on actually producing Arrows for combat use. On this basis, we estimate the flyaway cost per aircraft, complete in every respect, including Iroquois engines and fire-control system, would be $3.5 million for the first hundred and $2.6 million for the next hundred. These costs do not include spares or ground-handling equipment or development and tooling costs.

These figures have been arrived at first by taking into account the anticipated savings resulting directly and indirectly from changes in the fire-control system and armament, and secondly by looking at the whole matter of costs on a realistic basis.

In its October 25 issue, Maclean's said a U. S. substitute was roughly comparable to the Arrow and could be bought for half the price. In the first place, it is not comparable. It does not even meet the basic requirements of the RCAF for a two-engine, two-man interceptor which the air force says are essential to effective operation over Canada's vast and largely uninhabited northern territory.

Secondly, despite the fact that the two aircraft are not comparable, the American interceptor cannot be bought for anything like half the price of the Arrow. In fact, if the economic advantages of the Arrow program in terms of employment and taxation returns to the federal treasury are considered, it could probably be shown that no saving at all would result in buying this substitute.

In addition to the prime considerations I have dealt with, there are other factors and implications which should not be overlooked.

The decision to create the Arrow and its Iroquois engine followed the successful creation of its predecessors, the CF-100 and the Orenda. This was part of a Canadian determination to win independence in matters of our own defense. This determination is reflected, among other things, in the construction, by Canadian shipyards, of destroyer escorts for the Royal Canadian Navy. These Canadian-created vessels were unmatched anywhere.

As a result, in the aeronautical field, supremely skilled design and engineering teams were created. In the case of aero-engines, a whole new industry was born. Their achievements include the Jetliner, the CF-100, the Orenda jet engine, the Arrow and the Iroquois.

These products and developments grew one from the other as skill built upon skill. As they grew, so did the storehouse of human intellect which represents the best hope for our country's future in a world where science and technology have become the twin gateways to progress.

A reservoir of some four thousand skilled engineers and technicians has been assembled. It represents a priceless national asset that has given Canada new technical, military and political stature and independence. Any action which tends to reduce or destroy such an asset would be a denial of Canada's potential in the modern world. Our right to an independent and authoritative voice in world affairs would be diminished.

Important as these considerations are to the future of our country, they are still supplementary to the prime factor of military need. I do not mention them as part of the main reason why I feel confident the Arrow program will be continued. The military consideration alone has been shown to be sufficient for this. ★