



THE AVRO CANADA CF-105 ARROW PROGRAMME: DECISIONS AND DETERMINANTS

The Avro Arrow

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Origins



Canada came of age during the Second World War and was widely recognized as a nation with enormous industrial potential. C.D. Howe, the Liberal Minister of Munitions and Supply and of Reconstruction responsible for the disposal of war assets, was anxious to see the development of an indigenous high-technology aircraft industry. Sir Roy Dobson, Managing Director of A.V. Roe and Company, a division of Hawker-Siddeley Aircraft of Britain, was impressed with Canada's wartime aviation achievements and shared Howe's dream. In 1945, Howe sold Victory Aircraft Limited, a Crown Corporation located in Malton, Ontario, under generous terms to Dobson's company: A.V. Roe Canada Limited, which would later be known as Avro Aircraft Limited, was born. Avro's mandate was not to be a mere branch-plant operation, manufacturing foreign aircraft under license. As Avro boldly declared, their world-class staff were to be "Designers and Builders of All Types of Aircraft."



A maritime reconnaissance version of the famed Lancaster bomber. A Crown Corporation, Victory Aircraft Limited built 430 Lancasters during World War Two. In 1945, Victory Aircraft Limited was sold and became A.V. Roe Canada Limited, the aircraft division of which was later renamed Avro Aircraft Limited.¹



The C-102 prototype in flight and landing. In 1949, the C-102 missed being the first jet transport to fly in the world by only thirteen days. In 1952, the Liberal government shelved the project so that Avro could concentrate on the production of a military aircraft - the CF-100 Canuck.²

In 1946, Avro undertook its first design project, a commercial transcontinental jet transport built to specifications drawn up by Trans-Canada Air Lines (TCA). On August 10, 1949, the Avro C-102 Jetliner prototype took flight, missing being the first jet-powered passenger aircraft to fly in the world by only thirteen days. On April 18, 1950, the Jetliner carried the world's first jet-delivered airmail during a record-breaking Toronto-New York flight. But Avro encountered difficulty in dealing with TCA and the Department of Transport and, despite considerable interest from Howard Hughes, owner of TransWorld Airlines, and the United States Air Force (USAF), no Jetliners were sold. With the outbreak of the Korean War Howe ordered work on the project discontinued so that Avro could concentrate on military aircraft. The sole Jetliner, which had been years ahead of its time, was scrapped by Avro in 1957.



The C-102 prototype in flight and landing. In 1949, the C-102 missed being the first jet transport to fly in the world by only thirteen days. In 1952, the Liberal government shelved the project so that



The Avro C-102 Jetliner, a short-to-medium range jet transport.⁴

Avro could concentrate on the production of a military aircraft - the CF-100 Canuck. [3](#)

The Canuck

Avro's first and only successful venture came in the area of military rather than civil aviation. The Royal Canadian Air Force (RCAF) had learned from frustrating wartime experience the difficulty in obtaining foreign-built combat aircraft suited to Canada's peculiar defence needs. In 1946, Howe, determined to secure an independent and domestic source of weaponry for the RCAF, awarded Avro a contract to design a long-range, two-seat, twin-engine all-weather interceptor to meet the RCAF's North American and European air defence commitments. In that same year Avro bought Turbo Research Limited from Howe, renamed it Orenda Engines Limited, and began developing a jet engine to power the proposed fighter.



The Avro CF-100 Canuck Mark 4, two-seat, twin-engine, all-weather interceptor. [5](#)



The Avro C-102 Jetliner, a short-to-medium range jet transport. [6](#)



A CF-100 Mark 5 over Parliament Hill. [7](#)



A CF-100 Mark 5, repainted in the original black and white paint scheme of the first prototype, on the occasion of the retirement of the last CF-100 from active service, 1981. [8](#)



CF-100 Mark 3 test aircraft used in the Velvet Glove air-to-air missile programme. Designed by the Canadian Armament Research and Development Establishment, Velvet Glove was deemed obsolete in 1954 and cancelled. [9](#)



Exploded view showing the major components of the Avro CF-100 Canuck Mark 4. [10](#)

The Avro CF-100 Canuck prototype took flight for the first time on January 19, 1950. Because of the tense Cold War climate, accelerated production began in 1952. Despite early RCAF and government anxiety over a structural design flaw, successively improved versions of the Canuck and the Orenda engine kept the plant busy until 1958 when the 692nd and last Canuck rolled off the assembly line. The overall cost of the programme was \$750 million. Canucks served with distinction in thirteen

RCAF squadrons, nine in Canada and four in Europe, and fifty-three were purchased by the Belgian Air Force. A total of 3838 Orenda engines were built, 1723 of which became the power plant of the Canadair-built Sabre Jet. Reliable and cost-effective, the final mark of the Canuck could exceed Mach 1 in a dive, had a 45,000 ft ceiling, a 689mm range, a sophisticated radar fire-control system and was formidably armed with machine-guns and unguided rocket pods. Known affectionately as the "Clunk" by RCAF pilots, the last Canuck, an electronic countermeasures version, was retired by the Canadian Armed Forces in 1981.



A CF-100 Mark 3. [11](#)



A CF-100 Mark 4. [12](#)



A CF-100 Mark 5. [13](#)



The 692nd and last CF-100, a Mark 5, is rolled out of the factory. Behind it is the fourth Avro CF-105 Arrow prototype, the aircraft designed to replace the Canuck. [14](#)

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Design



The Arrow programme was plagued by trouble from the beginning. In 1952 an apprehensive Howe, now overseeing the Department of Defence Production (DDP), opposed awarding Avro the Arrow contract, but the nationalistic arguments of Brooke Claxton, Minister of National Defence, won out in Cabinet. In 1954, scientific advisors at two Canadian aeronautical research agencies disputed Avro's performance calculations; Avro was only vindicated after a third-party evaluation by a US laboratory. In 1956, over Avro's strenuous objections, the RCAF and DDP opted to fund the development of Astra I, an exceedingly ambitious radar fire-control system, and to take over development of the Sparrow II, a cancelled US air-to-air missile, instead of buying off-the-shelf equipment. While the US and Britain offered their encouragement and admiration, neither expressed any serious desire to purchase the Arrow. By 1957, the RCAF had halved its requirement for Arrows and the St. Laurent government, unnerved by the steeply rising costs, ordered the entire project reviewed every six months and development slowed and scaled down until test flights could prove the Arrow's airworthiness.



The Avro Aircraft Limited plant at Malton, Ontario, 1957 (now Toronto's Pearson International Airport). At its peak the plant directly employed over 14,000 workers.¹⁵



Early aerodynamic data on the Arrow design was gathered from small wind tunnel models and larger free flight models mounted on Nike rockets. ¹⁶



The Avro plant gears up for production of the prototypes. The first Arrow, 201, can be seen in the background in the final assembly stage; in the foreground is a full-size metal mockup of the Arrow. ¹⁷



Excerpts from the minutes of the March 23, 1955 Cabinet meeting during which approval was given to proceed with the Arrow programme. ¹⁸

Despite the warning signs and its precarious dependence on military contracts, Avro appeared to prosper under the leadership of Crawford Gordon, President and General Manager of A.V. Roe Canada Limited. The parent corporation had become the third largest corporation in Canada, a diversified industrial giant comprising nearly forty companies and directly employing over 41,000

people. Then, on June 10, 1957, Canadians went to the polls, and to the surprise of virtually everyone, the twenty-two-year Liberal dynasty was shattered. A Progressive Conservative minority government was elected, and John Diefenbaker became Canada's Prime Minister.



Letter from Donald Quarles, Secretary of the United States Air Force, to Ralph Campney, Minister of National Defence re. recommendation for Arrow programme. Both the United States Air Force and the Royal Air Force consistently expressed admiration for the Arrow, but no other country was seriously interested in purchasing it.¹⁹



Front page of October 5, 1957 Globe and Mail newspaper announcing the launch of the world's first satellite by Russia.²⁰

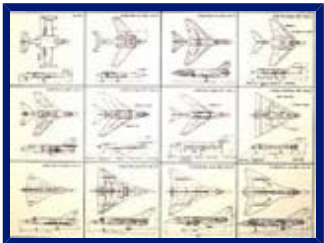


[Text of a speech](#) (PDF)

by Major-General George Pearkes, V.C., Minister of National Defence, on the occasion of the roll-out ceremony of the first Avro Arrow.²¹

Evolution

Production of the Canuck was barely underway when the RCAF issued specifications for an advanced successor that could shoot down the next generation of Soviet supersonic nuclear bombers. An RCAF evaluation team again concluded that no suitable aircraft were to be found in the US or Britain. An RCAF evaluation team again concluded that no suitable aircraft were to be found in the United States or Britain. In 1953, the St. Laurent government awarded Avro a \$27 million, five-year contract to design two prototypes of a long-range, two-seat, twin-engine, supersonic, all weather interceptor - the Avro CF-105 Arrow. The RCAF anticipated that 500-600 Arrows at \$1.5-2 million each would be needed to replace both the Canucks and the Sabre Jets in service. Because of the lack of a suitable jet engine, in 1954 the PS-13 Iroquois, a new and powerful jet engine that Orenda was pursuing as a private venture, was chosen as the power plant for the proposed fighter.



The evolutionary design process which led to the Avro CF-105 Arrow.²²



Four key players in the Arrow story in front of a CF-

100. From left to right: Crawford Gordon, President and General Manager of A.V. Roe Canada Limited; C.D. Howe, Minister of Defence Production; Air Marshal Wilf Curtis, Chief of Air Staff, Royal Canadian Air Force; and Sir Roy Dobson, Chairman of the Board of A.V. Roe Canada Limited. [23](#)

In 1955, the growing Soviet bomber threat led to the acceleration of the development of the Arrow. Avro was awarded a revised \$260 million contract for five Arrow I aircraft powered by Pratt and Whitney J-75 engines to be followed by thirty-five Arrow II aircraft fitted with the as yet unavailable Iroquois engines. Contrary to standard industry practice, which was to produce a custom-built prototype, exhaustively test it, and then set up an assembly line, Avro decided to eliminate this expensive and time-consuming process through intensive and thorough preliminary research and model testing. Avro would construct and experiment on full-scale mock-ups of the Arrow and its individual systems, and wind tunnel and rocket-mounted free flight models were to be tested. Both prototypes and pre-production aircraft would then come directly off the assembly line, and it was felt that any increased research and development costs would be more than offset by savings in time and labour which would reduce manufacturing costs.



The Arrow's creators. From left to right: Bob Lindley, Chief Engineer; Jim Floyd, Vice President, Engineering; Guest Hake, Arrow Project Designer; and Jim Chamberlin, Chief Aerodynamicist. [24](#)



Letter from C.D. Howe, Minister of Defence Production, to Brooke Claxton, Minister of National Defence re. apprehension over Arrow programme. [25](#)

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Flight Testing



By 1958, the RCAF had again halved its requirement for Arrows but was still receiving almost fifty per cent of a shrinking defence budget: the Arrow programme alone had cost \$300 million to date. An alarmed CSC realized that if the Arrow programme went ahead as recommended there would no money for re-equipping European-based RCAF squadrons for the nuclear strike-reconnaissance role, replacing aging navy warships, or acquiring armoured vehicles and tactical nuclear missiles for the army. Furthermore, the launch of Sputnik heralded the dawn of the missile age. The strategic rationale behind Western defence policy shifted from an emphasis on defence to deterrence: NORAD forecast that by 1961, the year the Arrow was scheduled to enter squadron service, the principal Soviet threat to North America would come from intercontinental ballistic missiles, not bombers.



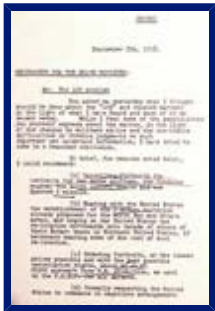
Not all test flights proceeded without incident. Both Arrow 201 and 202 suffered minor damage when they crashed on landing due to collapse of the landing gear. [26](#)



Not all test flights proceeded without incident. Both Arrow 201 and 202 suffered minor damage when they crashed on landing due to collapse of the landing gear. [27](#)



Arrow 203 with drag chute deployed. The drag chute brought the aircraft to a quick stop upon landing. [28](#)



[Memorandum](#) from R.B. Bryce, Clerk of the Privy Council, to Prime Minister John Diefenbaker re: recommendations for Arrow programme. The notations are Diefenbaker's. [29](#)

While Avro lobbied frantically, the CSC informed the Diefenbaker government that there were only two feasible courses of action left. One was to complete the Arrow production run at the staggering cost of \$12.5 million each. The alternative was to cancel the project and to buy from the US two relatively cheap Bomarc-B nuclear surface-to-air missile installations, its complementary command and control system and 100 comparable interceptors at a greatly reduced cost of \$2 million each. But Diefenbaker was not yet ready to swallow such a bitter pill. On September 23, 1958, Diefenbaker announced that air defence requirements were to be revised because of the diminished Soviet bomber threat. The two Bomarc-B bases would be built, the Astra I and Sparrow II programmes were cancelled, but because of serious unemployment in the Toronto area a decision as to what

interceptor to procure would be postponed for six months.



The only four experimental test pilots to fly the Arrow. From left to right: Spud Potocki, Peter Cope, Royal Canadian Air Force Flight Lieutenant Jack Woodman, and Jan Zurakowski.³⁰



Arrow 201 was one of five Arrow prototypes built and flown.³¹



Flight line showing Arrow 201, 202 and 204.³²



Arrow 203 shown in day-glow marking. Day-glow patches were applied to make the aircraft more visible to observers during flight or in case it went down in the snow. Note the Red Ensign on the tail: Arrow 203 was the only aircraft to have this national marking applied.³³



Avro Experimental Test Pilot W.O. (Spud) Potocki climbing into the cockpit of Arrow 204.³⁴



The classic Arrow photograph - Arrow 205 during its first and only flight.³⁵

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Roll-Out



Diefenbaker and his Minister of National Defence, Major-General George Pearkes, V.C., inherited two thorny defence programs from the Liberals - the Arrow programme and the North American Air Defence Agreement (NORAD). In July 1957, on the advice of Pearkes and the Chiefs of Staff Committee (CSC) and without consulting Cabinet or a stunned Department of External Affairs, Diefenbaker casually signed the agreement. Canada was now formally committed to joint continental air defence an, consequently, the supranational military integration of the RCAF, who unquestioningly accepted US strategic principles, and the USAF. A storm of criticism ensued, which fed the partisan Diefenbaker's mistrust of anyone who had served the previous government - including the military and the top management of A.V. Roe Canada Ltd.



October 4, 1957. At a roll-out ceremony at the Avro plant, the first Arrow, 201, is unveiled.^{[36](#)}



October 4, 1957. At a roll-out ceremony at the Avro plant, the first Arrow, 201, is unveiled.^{[37](#)}



October 4, 1957. At a roll-out ceremony at the Avro plant, the first Arrow, 201, is unveiled. ^{[38](#)}



Major-General George Pearkes, V.C., Minister of National Defence, addressing the crowd at the roll-out ceremony. Immediately to his left, in sunglasses, is Fred Smye, President and General Manager, Avro Aircraft Limited; immediately to his right, in hat and sunglasses, is Crawford Gordon, President and General Manager of A.V. Roe Canada Limited. ^{[39](#)}



[Letter](#) of congratulations from Prime Minister Diefenbaker to Fred Smye, President of Avro Aircraft Limited.^{[40](#)}

If the Liberals had been frightened by the consequences of terminating the Arrow programme with an election pending, the Conservatives recoiled from the prospect of cancelling it during an economic recession when they did not have a majority in the House of Commons. For political rather than military reasons, the inexperienced Diefenbaker government gave the CSC and a worried Avro the go-ahead to continue development of the Arrow on a restricted basis for one year whereupon the entire project would be reviewed. On October 4, 1957, a proud Avro officially rolled the first prototype, Arrow 201, out of its hanger. However, on the same day the Soviet Union launched into orbit Sputnik, the world's first satellite, shocking a complacent West and , symbolically, driving the Arrow from the headlines. On March 25, 1958, Arrow 201 flew for the first time, proving its airworthiness. Six days later Canadian voters returned the Diefenbaker government to office with the strongest electoral mandate in Canadian history.

First Flight



Jan Zurakowski, Avro's Chief Experimental Test Pilot, climbing into the cockpit of Arrow 201.⁴¹



March 25, 1958. Arrow 201 takes off for the first time.⁴²



Arrow 201 during its maiden flight.⁴³



Arrow 201 over the Avro plant, Malton, Ontario.⁴⁴



Arrow 201 comes in for a landing.⁴⁵



Avro personnel celebrate with Jan Zurakowski after Arrow 201's successful and historic first flight.⁴⁶

The Arrow

[illegible]

This technical drawing illustrates the structural components of a bridge, specifically focusing on the main span and the supporting towers. The drawing is a detailed cross-section or elevation view, showing the internal framework and the arrangement of cables. Key features include the main span, the towers, and the supporting cables. The drawing is labeled with various parts and includes a legend.

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The Arrow's nuclear-tipped or conventional high-explosive air-to-air missiles would have been carried internally in an innovative detachable weapons pack. No gun was carried. [55](#)



A close up view of the complex main landing gear. [56](#)

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The Iroquois



Arrow 201 and a CF-100 positioned for a test run of their engines. Because the Iroquois jet engine was not yet available, the first five Arrows were equipped with Pratt and Whitney J-75 jet engines.⁵⁷



Another subsidiary of A.V. Roe Canada Limited, Orenda Engines Limited designed the Iroquois jet engine as the intended powerplant for all production Arrows. The Iroquois remains one of the most advanced jet engines ever developed.⁵⁸



An Iroquois jet engine being readied for installation in the engine cavity of Arrow 206. Arrow 206 was to have been the first Arrow to have flown with these engines installed.⁵⁹



The Iroquois jet engine was tested on a rear engine nacelle mounted on a B-47 bomber on loan from the United States Air Force Strategic Air Command.⁶⁰



Avro Aircraft Limited advertisement from 1959, just prior to cancellation of the Arrow programme.⁶¹



Letter from Fred Smye, President and General Manager, Avro Aircraft Limited, to Major-General George Pearkes, V.C., Minister of National Defence re. cost of the Arrow programme.⁶²



Progressive Conservative Prime Minister John Diefenbaker with his Minister of National Defence,

Front page of February 21, 1959 Globe and Mail Weekly newspaper announcing cancellation of the Avro Arrow programme.⁶³



[Text of a February 20, 1959](#) speech by Prime Minister John Diefenbaker to the House of Commons announcing the cancellation of the Arrow programme⁶⁵

Major-General George Pearkes, V.C. First elected in 1957, the Diefenbaker government deferred making any decision to cancel the Arrow programme until 1959.⁶⁴

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Cancellation



The Avro CF-105 Arrow, two-seat, twin-engine, all-weather supersonic interceptor. Representative colour schemes are shown for each of the Arrows flown between October 4, 1957 and February 20, 1959. [66](#)



The Avro CF-105 Arrow, two-seat, twin-engine, all-weather supersonic interceptor. Representative colour schemes are shown for each of the Arrows flown between October 4, 1957 and February 20, 1959. [67](#)

By 1959, five Arrows had been successfully test flown and the Iroquois-equipped prototype was being readied for its expected world speed record-breaking first flight. Avro had also managed to increase the range of the Arrow and reduce its cost to \$7.8 million each by redesigning it to accommodate a US radar fire-control and missile system. However, though there was no doubt that the superb Arrow was state-of-the-art, Avro was forced to fight a losing battle against critics in and out of government who declared that the missile rendered the manned interceptor obsolete. Meanwhile Pearkes made a last-ditch attempt to sell the Arrow to Britain and the US - and failed.



Excerpts from the minutes of the February 14, 1959 Cabinet meeting during which the decision was made to cancel the Arrow programme. [68](#)



Stamp commemorating the fiftieth anniversary of powered flight in Canada, issued shortly after the cancellation of the Arrow programme. [69](#)

Destruction

On February 20, 1959, Diefenbaker announced the immediate termination of the Arrow and Iroquois programmes and his intention to acquire nuclear warheads for the Bomarc-B and other weapons systems. Cancellation charges brought the total development costs of the Arrow programme to \$470 million. In the furore that followed nationalists and the Opposition publicly vilified the Diefenbaker government for its handling of the situation; privately Howe admitted that he would have done the same, only earlier. The CSC were disturbed by Diefenbaker's reliance on military rather than economic arguments to justify the cancellation - and that there was only a vague promise of replacement interceptors for the RCAF. Avro and Orenda, having done little to prepare for this contingency, were ruined. Top management personnel resigned, and over 14,000 highly skilled employees were fired on "Black Friday," largely leaving for jobs with British or US companies with a number making an invaluable contribution to the US space programme. In 1962, A.V. Roe Canada Limited was renamed Hawker-Siddeley Canada Limited: the Malton facilities were eventually bought by the US McDonnell-Douglas Corporation.



After the cancellation, all existing Arrows were ordered blowtorched and scrapped.⁷⁰



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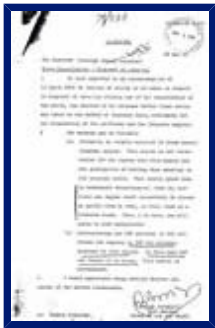
All that survived the destruction of the Arrow prototypes, on display at the National Aviation Museum, Ottawa - the cockpit and nose section of Arrow 206 and an Iroquois jet engine.⁷²



All that survived the destruction of the Arrow prototypes, on display at the National Aviation Museum, Ottawa - the cockpit and nose section of Arrow 206 and an Iroquois jet engine.⁷³



Cartoon showing Prime Minister John Diefenbaker on top of the Parliament Building clock shooting down the Avro Arrow with a machine gun.⁷⁴



Memoranda from Air Marshal Hugh Campbell, Chief of Air Staff, Royal Canadian Air Force, and Major-General George Pearkes, V.C., Minister of National Defence re. disposal of existing Arrows.⁷⁵



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Aftermath



The Diefenbaker government was destined to fare little better than Avro had. As the CSC had feared, it was 1961 before the RCAF received sixty-six of the more up-to-date US-built CF-101B Voodoo, an interceptor which had previously been rejected by the RCAF evaluation team in 1953. The Diefenbaker government also infuriated the US administration by refusing to honour its commitment to accept nuclear warheads, thereby rendering the Bomarc-B, the Voodoo and hundreds of millions of dollars worth of other weapons systems virtually useless. In the 1962 election the hapless Diefenbaker government was reduced to a minority, and in 1963 it fell after a non-confidence vote condemning its ill-considered and badly-managed conduct of Canada's foreign policy and defence policy.

The six existing Arrow prototypes were offered to Canadian, US and British aeronautical agencies for research purposes, but they were rejected because it was simply too expensive to keep such a small number of aircraft flying. The prototypes were then unceremoniously reduced to scrap by the DDP, and the Avro CF-105 passed into history.



With the termination of the Arrow programme, Avro was left with few contracts. One was for the Avrocar, a vertical take-off and landing circular-wing air-cushion vehicle. A United States Air force funded project, it too was cancelled in 1961 after ten unsuccessful years of research and development. [76](#)



With the termination of the Arrow programme, Avro was left with few contracts. One was for the Avrocar, a vertical take-off and landing circular-wing air-cushion vehicle. A United States Air force funded project, it too was cancelled in 1961 after ten unsuccessful years of research and development. [77](#)



The Bomarc-B nuclear surface-to-air missile purchased by the Diefenbaker government in 1958 to replace the Arrow. The two squadrons deployed at North Bay, Ontario and La Macaza, Quebec were phased out in 1971. [78](#)



The Bomarc-B nuclear surface-to-air missile purchased by the Diefenbaker government in 1958 to replace the Arrow. The two squadrons deployed at North Bay, Ontario and La Macaza, Quebec were phased out in 1971. [79](#)



Two of the sixty-six American-built McDonnell-Douglas CF-101B Voodoo interceptors purchased by the Diefenbaker government in 1961 to replace the Arrow. The Voodoo continued to service until 1984 when it was replaced by the McDonnell-Douglas/ Northrop CF-18.⁸⁰



'78' model replica of the Arrow used in the production of the TV mini series "The Arrow". Built by Allan Jackson.⁸¹

The Arrow was a truly Canadian product by Canadians for Canada. The Arrow and the Iroquois programmes were a pinnacle of Canadian aviation achievement, the like of which we may never see again. It was a time when the eyes of the aviation world were on Canada.

The design, construction and development of these fine products was the Canadian equivalent to putting a man on the Moon.

The tragedy is that although we demonstrated success, we were never able to reap the benefits.



Courtesy of the Regina Leader Post January 15, 1997.⁸²



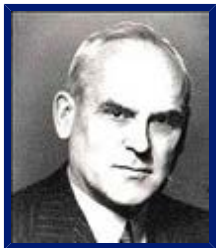
"Half a Century of Canadian Avro Aircraft." A reproduction of a painting depicting the history of the Avro Arrow Aircraft from 1943 Lancaster MK X KB700 to the Avro Arrow.⁸³



Reproduction of Avro Arrow logo.⁸⁴



Avro CF-105 Arrow 205 over Malton, Ontario.⁸⁵



Portrait of C.D. Howe.⁸⁶

"I can now say," C.D. Howe, Canada's Minister of Defence Production, remarked to the House of Commons on June 28, 1955, "that we have embarked on a programme of development that frankly gives me the shudders - a supersonic plane and a supersonic engine." Howe was referring to the Avro CF-105 Arrow and the Orenda Iroquois programmes, and his fears were warranted. What began as a modest venture in advanced supersonic interceptor design and development became,

through profligacy and skyrocketing costs, the most expensive and complex defence project ever undertaken in this country. The Arrow was destined to haunt Canada's governmental, military and corporate decision-makers throughout the 1950s, only to achieve legendary status in the hearts and minds of average Canadians after its controversial cancellation.

This is the triumphant and tragic story of A.V. Roe Canada Limited and the Avro CF-105 Arrow from optimistic creation in 1953, to fatal expansion in 1955, to drastic curtailment in 1957, and to inglorious termination in 1959.

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