

Canadian Aviation: The First 106 Years

Our Aviation history is short by most standards, a little over 106 years. Let's take a quick look at how aviation developed over the 106 years in Canada since the first flight in 1909. This article relates to Canadian history and may not resonate with our American friends and other populations who read DOM but the stories are similar. I believe that it is important for maintenance technicians to understand as much as possible the origins of the current aircraft and regulatory systems.

The Beginning

The development of the light internal combustion engine with enough power to allow a reasonable chance of success in powering aircraft had captured the imagination of scientists and technicians in many countries. Work being carried out in Europe, the United States and Brazil was monitored in Canada. The first successful Canadian powered flight was at Baddeck, Nova Scotia in 1909.

Aviation technical developmental work was carried out by a surprising variety of individuals across Canada. Farmers on the prairies constructed early engines; some basic helicopter work was carried out on the lower mainland of BC; and many people worked on flight problems in Quebec and Ontario. And of course, work was conducted as well in the Maritimes, the site of Canada's first powered flight. Nearly everything had to be invented or adapted from other technical fields, power sources, controls, instruments and certainly how to make it all work including developing basic flying skills.

The First World War Years

Around the world, national militaries were extremely interested in the potential of aviation. In Canada, military flight training began in Toronto and military aviation trades training was set up at Camp Borden, Ontario. During the First World War, the Curtis Company of Toronto assembled aircraft designed in the United States for Canadian use.

Camp Borden was also the training centre for pilots and mechanics in Canada's war effort. Engine fitters and airframe riggers were the two dominant trades. Later, armament technicians became important as aircraft grew bigger and faster, and were loaded with more armament. Manufacturing firms tended to locate near larger centres like Toronto and Montreal for the ready supply of skilled labour. Many who served in the Royal Flying Corp and later the Canadian Air Force went from there into civil aviation work after the war.

Between the Wars

Canada began aerial mapping of all its territory, some of which had never been mapped. Canadian commercial air routes multiplied and expanded. In the north and west, early resource exploration and fire fighting began. The 1920s also saw the creation of the Royal Canadian Air Force and the first Civil Aviation Authority located in the Air Force organization. The Federal Department of Transport (DOT) was created in 1936 (now Transport Canada). The DOT assumed the regulatory oversight of civil aviation and also took over the building of airports and navigation facilities. The government greatly assisted early air operators with the air mail contracts. This work

eventually developed into the Trans-Canada flights staged along a new system of airway beacons and airports.

The expansion of bush flying together with national air routes supported a small manufacturing and maintenance industry base laying the foundation for great expansion during the Second World War. The pioneering Cross-Canada flights contributed greatly to the experienced aircrews for the Trans Atlantic ferry and cargo/passenger routes used so effectively in the Second World War. The brave bush pilots and their intrepid AMEs opened up the North to modern travel and communications during these times.

The Second World War

Many of Canada's largest maintenance facilities began during the Second World War and they continue in all parts of Canada today. They required technicians and Aircraft Maintenance Engineers. The need was filled by technical schools in many regions which eventually became today's community colleges.

Aeronautical research and development in Canada was led, and still is, by the National Research Council's aeronautical branch which built the necessary laboratories and wind tunnels. Electronics, electrics and instrumentation had by 1940 advanced enough that WWII became known as an electronics war. Community colleges rushed to develop training courses for the now large electronics manufacturing and repair industry and to meet the demand for skilled technicians.

The single greatest aviation achievement in Canada during WWII was arguably the enormous undertaking of the British Commonwealth Air Training Plan. Others were the creation of an air force in Europe, Ferry Command, and the associated growth in manufacturing including the four-engine Lancaster Bomber. Pioneering unguided and guided rocket work led to the development of rocket-based armament systems used on wartime fighter bombers and later on Canadian aircraft defending Europe and North America through NATO and NORAD.

Once the US joined the Allied cause it began building airports across the Canadian North which became a major war time project. Three main routes were constructed following some of the early Canadian pioneering work in the North. One paralleled the proposed Alaska highway. Starting in Edmonton, Alberta, a chain of airports was built across northern Alberta, British Columbia and then across the Yukon territory to Fairbanks Alaska. This was to allow aircraft to be ferried to the Soviet Union, then allied with Canada. Another route went from Churchill, Manitoba, up across the North West Territory to Greenland and Iceland. The other set of airports covered off Newfoundland and Labrador which allowed aircraft from eastern Canada and USA a route over the Atlantic via Iceland. After the war these airports became a vital cog in the building of the Cold War radar sites along the Arctic coast and are now the centers of our modern airport system in the North.

Post War: 1950 to 1980

The expansion of airports across Canada and especially in the north set the stage for post-war commercial aviation. Large manufacturing plants provided the means for post-war developments that included the world's first jet-powered airliner and the famous

Avro Arrow. Prior to the Arrow days the CF-100 and its Orenda engines were manufactured in the plants in Toronto that remained there after the war.

Even when the Arrow was cancelled in 1959 and Canada lost some 15,000 skilled workers, the manufacturing sector recovered by building CF-104s and CF-5s in Quebec. Later the CF-18 maintenance contract went to Quebec which people in Manitoba still chat about in aviation circles. Military orders and subcontracting to international manufacturers kept Canadian facilities going. A large military aviation force requiring civilian support made these years' busy ones. Trans-Canada Airlines (TCA) dominated commercial traffic at this time and later became Air Canada. Many other famous airlines existed during this period, among them Canadian Pacific, Wardair, Pacific Western, Nordair, Transair, Maritime Central and Quebecair. Sadly, few remain.

Late Twentieth Century: 1980 to 2000

The eighties brought in deregulation of the economic side of air carriers and the shuffle began. One early casualty was the renowned Wardair which was absorbed into Pacific Western Airlines which in turn was absorbed by Canadian Airlines. In 2001 Canadian Airlines was taken over by Air Canada. Calgary entrepreneurs then started West Jet which by 2008 had become number two in fleet size in Canada. West Jet is now over 100 aircraft strong. The story of this time technically would have to be around the electronic revolution and the new airframe and engine technologies that by now we were solidly embedded in the aviation system. The number of AMEs employed or at least licenced exceeded 12,000 out of perhaps 200,000 total employments in aviation related work.

Economic deregulation was an idea brought north from the U.S.A. It had the same effect south of the border as many of the legacy air carriers then went bankrupt. I recall working for one legacy carrier before deregulation. There wasn't the same attention paid to costs as the regulated fares were raised by the economic regulator to meet any increased costs. Once government regulated fares were eliminated the attention to basic costs increased drastically. One result that I saw in troubleshooting was not simply changing out components but making sure you actually had identified the correct malfunctioning component. A previous carrier I worked for had been meticulous in controlling maintenance costs by only changing out the malfunctioning component. The less cost conscious carrier was easier on your time pressure but it was costlier as many serviceable components went to the shops either internally or externally.

Government's Role

One must take note of the huge amount of public money spent on expanding Canada's air navigation system and airports. Beginning with enormous military investments by Canada, United States and even Great Britain in Canada's aviation industry during WWII, additional investments were made during the 50 years of the Cold War. In the 1950s Transport Canada took over and continued to expand and improve both these systems.

Government policy decisions during the 1980s and early 1990s led to the not for profit non government operation of nearly all of Canada's airports and the air navigation system. One reason given for doing this was the enormous capital costs which were

difficult to raise. Another reason was the desire for operating efficiency that is very difficult to achieve in government. All of this led to the creation of NavCanada and the many Airport Authorities that exist today. Transport Canada then became a policy and safety regulatory department with a large economic development component but an operator of few facilities. So Canada has gone full circle from private creation of aviation infrastructure through to large government control and involvement back to mainly private operations and financing of aviation infrastructure.

Key Events for Technicians and AMEs

If one wanders back across this history a few things stand out for those of us who are or were employed in the field of aircraft maintenance. The first was the issuance of the first Air Engineer licence in Regina, Saskatchewan to Robert McCombie on May 19, 1919. The first successful cross-country flight in Saskatchewan occurs when aviator Roland Groome and mechanic Robert McCombie, after having taken delivery of a war-surplus Curtiss JN-4C Canuck, fly it to Regina, their home. They stopped in Davidson and Disley. Because they were carrying a letter from the mayor of Saskatoon, F.R. Ramsay, to his counterpart in Regina, Henry Black, this was Saskatchewan's first airmail flight. So both aviation and AME history was made in my home province. Thanks to Gary Williams from the Canadian Aviation Historical Society for providing me this information.

The faithfulness in which the RCAF continued to support this licensing program during the nineteen twenties and early thirties right up until the creation of the Department of Transport was astounding. The Air Force itself had taken a much different model of training and certifying their maintenance technicians and inspectors.

The DOT was faithful to the system also and ran it throughout the war years. After the Second World War as the civilian industry boomed the title Air Engineer was changed to Aircraft Maintenance Engineer. In Canada we normally do not add licenced in front of AME as many other countries do, we just accept it is there.

Moving on, the formation of AME associations was a step forward led by the Atlantic Region AMEs. Ben McCarty and Lorne Amos led this effort. John Mew, who was the Chief, Manufacturing and Maintenance for Transport Canada in the national HQ, created an advisory council for AME licencing and training, another milestone. Next was the recommendation by the Justice Dubin Commission to licence avionics technicians as AMEs.

This took place in the early eighties during the time that I was responsible for all AME licencing and training among other duties as the Chief, Manufacturing and Maintenance in Ottawa. Mr. Mew had assumed another chief's job which was to write Canada's new aviation regulations.

During the late eighties Gordon DuPont and Gerry Wolfe were tasked to prepare a report on the future of AME licencing. This they did and it became a roadmap for many of the future changes. By 1992 I had moved out to the Western Region and Don Sherritt took over in Ottawa to become the first Director, Manufacturing and Maintenance in the Ottawa headquarters. Between Don and Tony Soulis, Chief, AME Licencing and Training, they managed the transition to the current Canadian system.

The Canadian Aviation Maintenance Council was formed in the late nineteen eighties after some initiative taken by Transport Canada and Immigration and Employment Canada to try and entice more people into aviation. This was done in recognition that many aviation trades had no national standards. This work continues today although CAMC has expanded into aerospace and flight training areas of activity. It is now known as the Canadian Aerospace and Aviation Council. Thanks to their support I began to write about maintenance technicians and AME history in Canada.

Today and Tomorrow

Canada's aviation standing in the world today is based on the pioneering work of those early aviators. There are many fine Canadian aviation museums both military and civil that tell their stories. Canada's Aviation Hall of Fame celebrates the accomplishments of many great test pilots, pilots, aeronautical engineers and representatives of other trades.

There may be potential for the use of airships in the north as general cargo carriers. Another growing area of interest is the idea of using pilotless vehicles, drones, for such things as border patrols, pipeline inspection, power line monitoring and military purposes.

Canada is second in the world for size and scope of its aviation network and also has a dynamic general aviation, air transport, manufacturing and maintenance and space sector. Canada is approximately fourth in the world in aerospace manufacturing and maintenance, not bad for a nation of 35 million people. Through all this AMEs and technicians still play a key role.