

May Meeting

Topic: McDonnell Douglas in Canada
Speaker: Frank Harvey, President of the
Aerospace Heritage Foundation of Canada
Reporter: Gord McNulty

Howard Malone, retiring as CAHS Toronto Chapter President after years of dedicated service to the Chapter and CAHS National, introduced Frank W. Harvey, who returned for a second presentation to the Chapter. In March of 2009, Frank discussed production of the Lancaster in Canada during World War II, as reported in Flypast Volume 43, Number 7. Frank, of Mississauga, is President of the Aerospace Heritage Foundation of Canada (AHFC) based in Toronto. The AHFC is a federally chartered non-profit organization with a special emphasis on the history of Avro Canada and Orenda Engines Ltd. at Malton. Before coming to Canada, Frank was an apprentice with de Havilland Aircraft at Hatfield, England. Gaining experience in all phases of aircraft manufacturing and testing, he worked on everything from pre-war biplanes to



Howard Malone Chairing his last meeting as President Photo - Neil McGavock

modern jet fighters and commercial aircraft including the de Havilland Comet, the first jet airliner to fly and enter service in the world.

At Avro Canada, Frank worked on the CF-100 Canuck and the CF-105 Arrow. He did repair and overhaul on the CF-100, and modifications on the CF-100 at various RCAF



Speaker Frank Harvey Photo - Neil McGavock

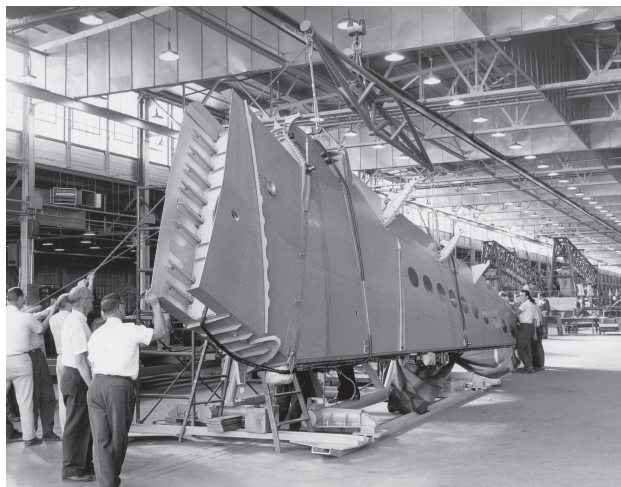
bases. He then worked in the Experimental Flight Test Department on the Arrow at Malton. When the Arrow was cancelled on Feb. 20, 1959, he was one of about 14,000 Avro and Orenda employees who lost their jobs. Along with his father, he attempted a business venture which did not proceed. Frank returned to the Malton plant, which had been acquired by de Havilland Canada in 1963. He worked on the Caribou, Buffalo and Turbo Beaver. Then he moved to the Douglas DC-9 when Douglas Aircraft of Canada, which later became McDonnell Douglas Canada (MD Can), began subcontracted production of wings and rear fuselage components for the DC-9 at Malton.

Frank completed assignments in various areas of manufacturing over the next few years. He was S.B.U. (Strategic Business Unit) Leader on the MD-80/90 Leading Edge program, in control of fabrication of parts and assembly of components. Since retiring in

1992, Frank has been retained on numerous occasions as a manufacturing consultant on new projects by both McDonnell Douglas and Boeing. He also has experience on MD-80 assembly and fabrication for the Xi'an Aircraft Company of Xi'an, China. He is also a member of the de Havilland Aeronautical Technical School Association.

In a two-part presentation, Frank began with a promotional corporate video featuring production of wings and other components for airliners at Malton. The video started with work on original Douglas aircraft including the DC-8, DC-9, and DC-10. Contracts followed for the MD-80 --- lengthened and updated version of the DC-9, and the MD-11 --- a stretched-fuselage, wide body development of the DC-10. The upbeat video noted the reputation for comfort, dependability, quality and workmanship that MD products had established for more than two decades. They had expanded horizons, accelerated business and had "given the world the ability to fly on Canadian wings."

The video showed MD Can's expansion of its sprawling facility at Lester B. Pearson Airport, to a point where it reached nearly two million square feet in size in its initial 25 years. Production began in 1965 when Douglas Aircraft began manufacturing DC-9 wings. The DC-10 contract followed in 1968, and the MD-80 contract in 1977, as operations grew steadily. More than 20 per



DC-9 Wing Assembly Photo Credit - Canadian Air & Space Museum



DC-9 Tailcone Assembly Photo Credit
- Canadian Air & Space Museum

cent of the total airframe of the MD-80 was built at Malton, and nearly 15 per cent of the MD-11 airframe was built at MD Can. Wing pylons for the F-18 Hornet were also built at Malton. Construction of such huge components as aircraft wings required integration of hundreds or thousands of individual parts, all to critical tolerances. The Malton complex was divided into two basic areas: parts fabrication, and production line assembly. The facilities were among the largest in the world. Production was demanding, and exacting. MD-11 wings, for example, were about 165 feet long but had components with tolerances as precise as five- or ten-thousands of an inch. Giant overhead cranes moved the mammoth assemblies from one stage of production to the next. For the MD-11, huge vertical jigs held the wing during initial assembly. Each stage required utmost skill and craftsmanship. Final mating of the wing with the fuselage was done at the MD facilities in Long Beach, California.

Up to 40,000 parts would be required for a set of aircraft wings, and many were described as "agonizingly complex in design." The fabrication of such parts to exact tolerances, on time, and at the lowest possible cost, was critical to continuing success --- especially given what the video described as the "fierce" competition in the aircraft industry. During the decade between 1980 and 1990, MD Canada invested more than \$100



First DC-10 Wing Photo Credit
- Canadian Air & Space Museum

million to modernize the plant and equipment and its operations had a major impact on the Canadian economy. Each aircraft produced benefited almost 1,000 external businesses --- vendors, suppliers, and sub-contractors --- which provided specialized materials and services for MD. Whether it was an MD-11 or an MD-80 series aircraft, an average of more than \$1 million was paid to vendors and suppliers. Each MD-80 generated about 200,000 total job hours in Canada, more than \$1 million in tax revenue for the federal government, and an additional \$5 million for Canada's Gross National Product. Each MD-11, meanwhile, generated 100,000 man-hours. When multiplied throughout the economy, each produced more than 330,000 job hours in Canada. By 1990, MD Can had invested more than a quarter of a billion dollars and provided Canadian exports of more than \$5 billion. MD Can had delivered major components for around 4,000 civil and military aircraft. Military production included work on the KC-10 air-to-air tanker as well as the F-18.

Taking the microphone, Frank noted that impressive story did not end happily.

McDonnell Douglas merged with Boeing in 1997 and the plant became Boeing Toronto Ltd., Boeing 717 wings, along with parts for the Delta rocket, the C-17 Globemaster III and the 737 jetliner were manufactured until the summer of 2005, when Boeing discontinued operations. The famous buildings were closed for good and the land they sat on was sold to the Greater Toronto Airports Authority. Demolition took place in stages.

Frank presented numerous slides showing operations at Malton, going back to as far as 1938 when there was just one building. Production facilities were greatly expanded through the years, and more buildings were added by MD Can. Wings for a total of 2,487 production DC-9s were built, along with a set of wings for a fatigue testing and two or three spare sets. The DC-10 family involved production of 650 sets of wings. Vertical stabilizers and galleys for the DC-9 were built until 1989, until the work was transferred to Macon, Georgia. Work was also done on DC-9 floors, until they were transferred elsewhere, as well as flaps. The flaps were built at Fleet Aircraft in Fort Erie, then shipped to Malton for finishing. Side panels for the F-18 were also produced at Malton for a time. Other projects included four or five years of work on DC-8 wing barrels. Production peaked with contracts for as many as five aircraft per week, with three shifts.

Frank had difficulty finding photos from the MD Can years. There are many more photos of Victory Aircraft, predecessor of Avro Canada, and Avro. When the plant was closed, all of the negatives and other files were shipped to the U.S. and their whereabouts are unknown. Frank said that Boeing Canada hasn't been able to provide information. The photos he showed included employees at work on DC-9 and DC-10 jigs, wing panels and leading edges, floor sections, F-18 pylons, and presentation of continuous improvement awards. What was to be the MD-95, a third-generation derivative of the DC-9, became the Boeing 717 when Boeing

acquired McDonnell Douglas. Boeing ended production of the 717 in 2005 on account of slow orders, after 156 were built, and that finished the Malton operation. The gradual closure of the facilities was sad in many respects. Prior to the demolition, the once-proud Avro hangars were reduced to being used to store contaminated soil from the parking lots. It was heart-rending to see photos of the demolition of the building where the Arrow was built. As fate had it, all of the Arrows were cut up and eventually the buildings themselves were levelled.

Frank was delighted to see two of his co-workers at McDonnell Douglas in attendance. They worked on the quality assurance side, while Frank was on the production side. Our speaker answered a number of questions. Boeing's acquisition of McDonnell Douglas was problematic from the start. Boeing cancelled the MD-80/90 series because it competed with their own 737, and then they shut down the MD-11. Howard Malone expressed his thanks to Frank for an interesting and nostalgic presentation. The history of aircraft production at Malton from start to finish is one of the most important aspects of aviation history not only for Toronto, but for all of Canada. Chapter Secretary – Treasurer, Bob Winson, presented Frank with a gift on behalf of the Chapter in appreciation. Frank's presentation was especially noteworthy for Howard, who noted that he spent about 19 years flying McDonnell Douglas jetliners including various models of the DC-8 and DC-9 for Air Canada. Howard described them as incredibly strong workhorses. The DC-8 freighter was able to carry what he called "phenomenal loads", and some examples remain in service around the world today.

One final event marked the end of the day's formal activities. Outgoing Chapter President Howard Malone was presented with a gift from the Chapter members of a T-33 Jet Trainer to note Howard's time in the airforce flying the advanced trainer. At the end of the

meeting Howard was given a "retirement cake", which he happily shared with all of the members. Many members personally thanked Howard for a job "well done" during his time as Chapter President.



Chapter President Howard Malone enjoying his gift of a model T-33 Photo - Neil McGavock

