2007 / 2008

AEROSPACE

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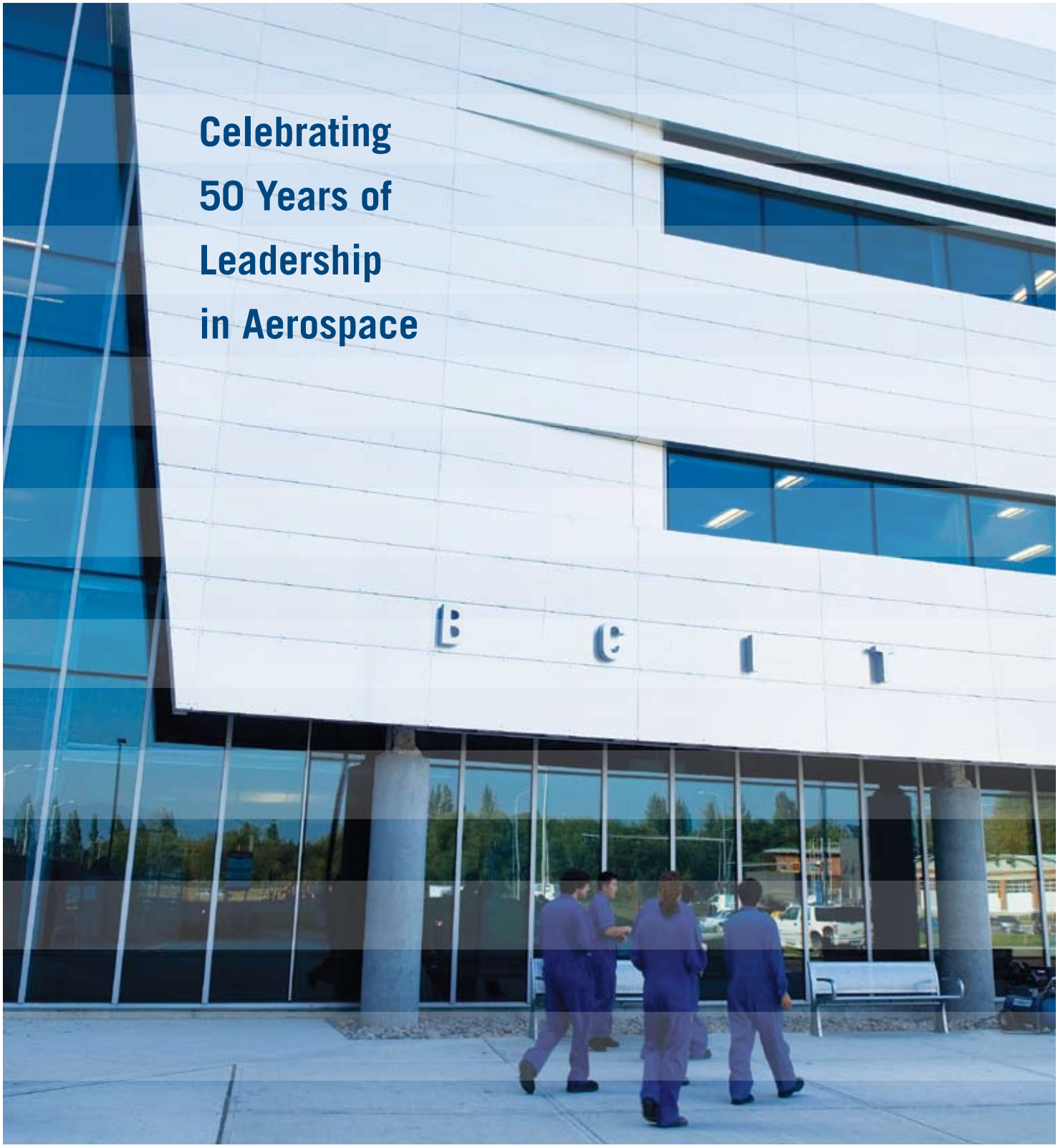
CANADA'S PREMIER POLYTECHNIC



KASIAN'S DESIGN TEAM IS SOARING WITH BCIT IN THE CREATION OF CANADA'S NEWEST AEROSPACE CAMPUS

Our collaboration with BCIT in the design of this exciting and dynamic facility was a great experience. Together we have created a unique place where students and faculty will be immersed in all aspects of flight. We are honoured to have been a part of the team that will surely see the careers of BCIT graduates take off!

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contents:

2007 / 2008

AEROSPACE

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This special edition of *SkyTalk* magazine has been produced by Westco Marketing Ltd., for the British Columbia Institute of Technology, Aerospace Technology Campus to celebrate 50 Years of Leadership in Aerospace, and on the historic occasion of moving to the new aerospace technology campus, 3800 Cessna Drive, Richmond, BC V7B 0A1

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PRIME MINISTER . PREMIER MINISTRE

I am pleased to extend my warmest greetings to everyone celebrating the opening of the Aerospace Technology Campus of the British Columbia Institute of Technology (BCIT).

As this new state-of-the-art facility comes into service, BCIT will be marking 50 years of offering aerospace programmes. For five decades, prospective engineers, technicians and pilots have gained invaluable training and instruction at BCIT. This new facility will offer students an ideal opportunity to learn in a modern, technologically advanced setting, preparing them for rewarding careers in the aviation industry.

I join you in offering sincere congratulations to everyone who helped make this new facility a reality. You should take great pride in this achievement.

On behalf of the Government of Canada, please accept my best wishes.

The Rt. Hon. Stephen Harper, P.C., M.P.

OTTAWA
2007

BRITISH COLUMBIA
The Best Place on Earth

August 23, 2007

A Message from the Premier

As Premier of the Province of British Columbia, I am pleased to welcome everyone to the new Aerospace Technology Campus (ATC) and congratulate the British Columbia Institute of Technology (BCIT) aerospace program on the occasion of its 50th anniversary.

The ATC is fortunate to be located on a 12 acre site at the gateway to the YVR Airport and offers a full range of certificates, diplomas and degrees. This is a very exciting program with the most technologically advanced aviation training schools in the world.

I would like to recognize the staff, students and volunteers who have contributed to the success of the BCIT aerospace program, and wish you all the best in the coming years as you continue to promote excellence in the aerospace industry.

Sincerely,

Gordon Campbell
Premier

Province of British Columbia
Office of the Premier
www.gov.bc.ca

PO Box 9041 Stn Prov Govt
Victoria BC
V8W 9E1

Office of the
Minister of International Trade and
Minister for the Pacific Gateway and
the Vancouver-Whistler Olympics

Cabinet du
ministre du Commerce international et
de la porte d'entrée du Pacifique et
des Olympiques de Vancouver-Whistler

Ottawa, Canada K1A 0G2

August 21, 2007

BCIT Aerospace Technology Campus
Vancouver International Airport
5301 Airport Road, South
Richmond, British Columbia, V7B 1B5

To The Administration, Faculty and Students of BCIT,

Please accept my congratulations on the opening of British Columbia Institute of Technology's state-of-the-art Aerospace Technology Campus.

BCIT has long been a leader in British Columbia and Canada in technology training. This momentous opening of the largest aerospace training school in Canada is something that BCIT and all British Columbian's should be proud of. The Aerospace Technology Campus will be one of the most technologically advanced aviation training schools on the planet, and is helping British Columbia and Canada remain world players in aerospace training and technology.

This new campus is also expanding training and skills development to help fill jobs in B.C.'s expanding job market. BCIT is and has been a valuable partner in helping prepare B.C. for the future, and allowing B.C. to become such a strong and vibrant economy. The federal government's contribution of $2 million to this important project helps to support BCIT's continued role in ensuring B.C's success. The opening of the Aerospace Technology Campus will allow BCIT to maintain its position as a key contributor to B.C.'s diverse educational system and economy.

Please accept my best wishes and congratulations on this historic opening.

Sincerely,

Honourable David Emerson, P.C., M.P.
Vancouver-Kingsway
Minister of International Trade and
Minister for the Pacific Gateway and
The Vancouver-Whistler Olympics

Canada

BRITISH COLUMBIA
INSTITUTE OF TECHNOLOGY

3700 WILLINGDON AVENUE
BURNABY, BRITISH COLUMBIA
CANADA V5G 3H2

bcit.ca

Fall 2007

It is with tremendous pride and excitement that we open the British Columbia Institute of Technology's new Aerospace Technology Campus (ATC) at the gateway to YVR.

Nearly 10 years in the making, we are extremely grateful to our generous donors in the aerospace industry both within and outside of Canada, to YVR, the City of Richmond, and our federal and provincial governments for committing to and supporting this significant undertaking. Staff across the Institute and our industry partners deserve special recognition; all have worked tirelessly, and with great vision, to make this campus one of the most innovative aerospace training facilities in the world.

Along with the opening of this astounding space, we are celebrating the 50th anniversary of aerospace technology training at BCIT. Our students, their success in applied programs, and their contributions back to industry and the economy have always been, and will continue to be, BCIT's focus.

On behalf of BCIT and the Board of Governors, thank you for partnering with us in so many different ways—and welcome to ATC!

Sincerely,

Dr. Verna Magee Shepherd
A/President
British Columbia Institute of Technology

CONGRATULATIONS

Congratulations to BCIT Aerospace celebrating its 50th anniversary and the opening of a new world-class aerospace and technology campus.

From your partner in aerospace – Avcorp.

50 years AVCORP

www.avcorp.com

history

50 High-Flying Years

From humble beginnings to reaching for the stars

As the British Columbia Institute of Technology's Aerospace Technology Campus (ATC) steps confidently into the 21st century with its new state-of-the-art training school and solid support and commitment from government and industry players, the year 1955 seems a long time ago. That was the year when the seed was first planted for an aerospace training program in Canada's western-most province.

The birth of that first program was a result of the same demand that started the ball rolling for BCIT's new ATC facility: the need to create additional spaces for eager students to feed a hungry aerospace industry in dire need of trained workers.

Consider that current aerospace-related industry estimates project 10,000 new professional workers will be needed by 2011. And that's just in British Columbia.

While the number of trained mechanics and technicians needed in the 1950s was not on the same scale as in 2007, the worldwide airline industry was booming even then. Massive technological advances made in aircraft and radar systems during the Second World War were beginning to pay huge dividends in the commercial airline industry by the mid-1950s.

Jet Age of Travel

Following the War, aircraft such as the Boeing Stratocruiser, the Lockheed

Sea Island Hangar – In 1978, the British Columbia Vocational School's aeronautical program moved from Burnaby to a new hangar at the Sea Island campus in Richmond. The campus would soon become part of the Pacific Vocational Institute.

Constellation, and the Douglas DC-6 were turning ordinary people into world travellers.

Then came the 1950s and the Jet Age, a heady time that saw the production of spectacular aircraft such as the De Havilland Comet, Boeing 707, and Douglas DC-8 in the Western world, and the Tupolev Tu-104 and Tu-124 in the Soviet Bloc.

By the mid-1950s, Vancouver International Airport was already 25 years old and had received its Class A International Airport designation after construction of a three-kilometre east-west runway in 1953.

In 1957, additional land to the north of the airport was acquired for a new control tower and West Terminal.

Growth at the airport continued the following year with the opening of Canadian Pacific Airlines Britannia Hangar, Canada's first jet-era hangar.

By the time Air Canada opened its sprawling maintenance complex in 1961, Vancouver International Airport was an essential maintenance hub for the Pacific Northwest.

Humble Beginnings

While this expansion was occurring on the Richmond waterfront, a few kilometres northeast, as the crow flies, a burgeoning school had been training and educating numerous maintenance engineers, airport managers, and flight operations personnel that were desperately needed to staff Canada's airports.

Between 1945 and 1947, Brisbane Aviation, a Vancouver airport-based company owned by Stan Sharp, offered specific training for aircraft engineers and pilots. One of the pioneer instructors in what would become the BCIT Aerospace Program, Chuck Roberts, was a graduate of the Brisbane Aviation training program. He would also be one of the last graduates of Brisbane Aviation's technician program before it folded in 1952.

As B.C.'s economy experienced robust growth in the early 1950s, trained workers were not only required in aerospace, but in a variety of industries. W.A.C.

The Aircraft Apprentice Scheme

The Aircraft Apprentice Scheme, introduced in 1920, was designed to produce a pool of skilled aircraft mechanics that could serve the newly formed British Royal Air Force. Situated at Halton in Buckinghamshire, England, the program originally signed on boys for 12 years service and assigned them to the trade of carpenter, sheet metal worker, fitter, or electrician.

In 1922, an aircraft apprentice was a 15-year-old boy who spent 20 hours a week on technical training in the workshops, nine hours on physical training, drill and games, and eight hours on education.

Other time was spent on barrack duties, homework, inspections, and recreational activities that included sports, a model aircraft club, and a debating society. The marks gained in the final examination in skill-of-hand and trade knowledge determined the graduating rank and rate of pay of the new airman.

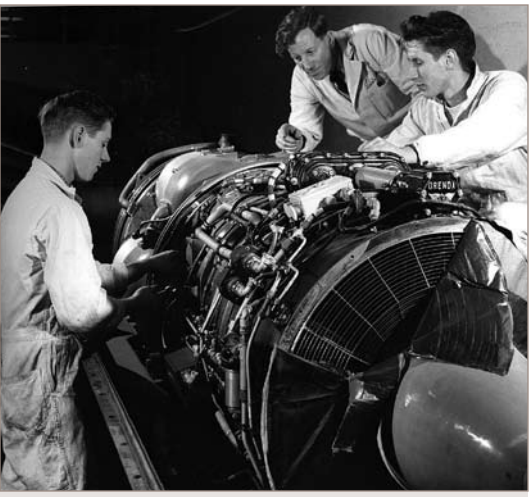
The Aircraft Apprentice Scheme, with its focus on a student's time being equally divided between instruction on theoretical aspects and practical hands-on work, remained the only method of regular entry into the Royal Air Force throughout the Second World War.

By the 1930s, the program had been shortened to a term of three years.

The aeronautics programs developed at BCIT's precursors, the Federal Provincial Technical Training Institute (FPTTI), British Columbia Vocational School (BCVS), and the Pacific Vocational Institute (PVI) all reflect the teaching practices developed at Halton.

Bennett's Social Credit government supported and fostered the many high-tech industries that were springing up, providing them with government support and financial assistance. Education also played a major role in the provincial government's economic agenda and the 1950s and 1960s saw unprecedented post-secondary education growth as vocational schools and colleges opened across the province.

BCIT's own roots can be traced to the 1936 British Columbia Vocational Institute (BCVS)—also referred to as the Dominion Provincial Vocational School. Its beginning were truly humble as the "school" was in actuality a garage in Burnaby.



Longtime British Columbia Vocational School instructor Geoff Bateman works with students on the Orenda gas turbine in this 1969 photo. Bateman and fellow instructors Pete Mills and Cy Tinley were graduates of the Aircraft Apprentice Scheme, an RAF-based teaching system based on the division of practical hands-on work and academic study. The new BCIT Aerospace Technology Campus maintains that teaching strategy.

Pacific Vocational School students stand beside the Bell 206 Jet Ranger helicopter that was donated by Aeronautical Accessories in 1983.

By 1955 BCVS had expanded, but still could not meet the demand for apprenticeship classes. Rather than turn students away, the school set up makeshift classrooms and workshops on the grounds of the Pacific National Exhibition (PNE) near the Vancouver-Burnaby city lines. This was not an ideal setup for students as some of the classes were held in cow barns and school was

not in session during the annual August PNE event.

Aircraft Apprentice Scheme

Two years later, in 1957, Bennett's government appointed the administrator of the PNE program to the Provincial Department of Education, and the following year, Lt. Col. John W. Inglis was appointed the first principal of the newly minted Federal Provincial Technical Training Institute (FPTTI).

By this time, and still with classes being held at the PNE grounds, the aviation-training program began to take flight under the watchful eye of, among others, instructor Geoff Bateman.

Bateman, along with fellow instructors Pete Mills and Cy Tinley, was a graduate of the famous Aircraft Apprentice Scheme that consisted of equal parts academic schooling and hands-on work. It was an RAF-endorsed training program developed at the RAF base in Halton, England, and its graduates embraced its proven track record. To that end, Bateman, Mills, and Tinley made sure the FPTTI aviation training programs were set up the same way.

That teaching method is still used in BCIT aerospace programs, and many of the design aspects of the new $77-million Aerospace Technology Campus reflect and embrace that separation of classroom and workshop.

The FPTTI institution was short-lived. By 1960, all the disparate technical training programs being offered by FPTTI at its facility, plus those being held at the PNE, were moved into a brand-new facility in Burnaby.

Instructor Ferdie Vachon (left) and B.C. Minister of Education Brian Smith at the official opening of the Pacific Vocational Institute at the Sea Island, Richmond, campus in 1981. The campus had been operational for several years prior, but this ribbon-cutting ceremony was unique. Vachon taxied a World War II Harvard Trainer (with Smith seated in the rear cockpit) towards a ribbon strung across the entrance of the B.C. Airlines hangar. The aircraft's propeller was then used to cut the ribbon. Smith stepped down from the rear cockpit and declared Sea Island's PVI campus officially opened.

BCVS Aerospace Program

Absorbing the FPTTI programs, the British Columbia Vocational School (BCVS) officially opened on June 29, 1960. Initially, the school offered 14 courses, ranging from six months for most trades to two years for aeronautics.

When the Russians put its manned satellite into space in October of 1957, the event had marked the official beginning of the space race, so when the BCVS opened its doors in 1960, "aerospace" replaced "aviation" in the school's training manuals.

With the creation of the BCVS, not only had the province finally established a permanent vocational school, but also the burgeoning aerospace program had found a home to establish itself and grow. And grow it did.

Throughout the 1960s and into the 1970s, the BCVS aerospace program trained hundreds of highly skilled workers for many facets of the aviation industry. Training programs included airport maintenance engineering, airport management, and flight operations. The helicopter maintenance-training program was second-to-none and graduates were always in demand, particularly in B.C., where the vast majority of the country's helicopters ply their trade.

Student Dave Upton gets a lesson in how to time magnetos on a Cessna 180 from instructor Bill Foyle (right) in this photo from 1972.

Pacific Vocational Institute

By 1977, the provincial government was ready to make another move to improve and expand the province's post-secondary landscape and, as had been the case two decades earlier, the aerospace program was set to benefit.

Under the guidance of B.C.'s Education Minister, Dr. Pat McGeer, the BCVS and the Haney Educational Centre in Maple Ridge were combined and renamed the Pacific Vocational Institute (PVI) on April 1, 1978. The idea was that the PVI could better serve the needs of industry by functioning as a Crown corporation under the governance of one board of industrial representatives, who would maintain direct financial control, planning, and operation of the educational institution.

This 'bridge' between education and

In October 1973, Air Canada donated an out-of-service airplane to the British Columbia Vocational School. Photo forms part of the Geoff Bateman collection.

A truck delivers another load of equipment during the 1978 move from the British Columbia Vocational School in Burnaby to the then-new Sea Island campus in Richmond.

industry was an ideal situation for the school's Aerospace Program, since the high-rate of technological change in the aviation industry—computers were just on the horizon in 1978—meant the aerospace curriculum needed to match the needs of the ever-changing aviation business.

New Sea Island Campus

But the biggest improvement for the new PVI Aerospace Program was the move in 1978 to its very own campus in a hangar on Sea Island, just a block or so from Vancouver International Airport.

Not only did the new facility give the aerospace program the kind of room it needed to store its ever-growing fleet of planes and helicopters that served as testbeds for students, but also proximity to the airport and associated aerospace businesses. As students worked on engines, there would be the constant hum of planes and the buzz of helicopters taking off and landing all around the PVI Sea Island Campus.

Half a decade after the establishment of PVI, the school boasted a registration of about 23,000 students, but because of space limitations maximum enrollment in the aerospace program was capped at 400.

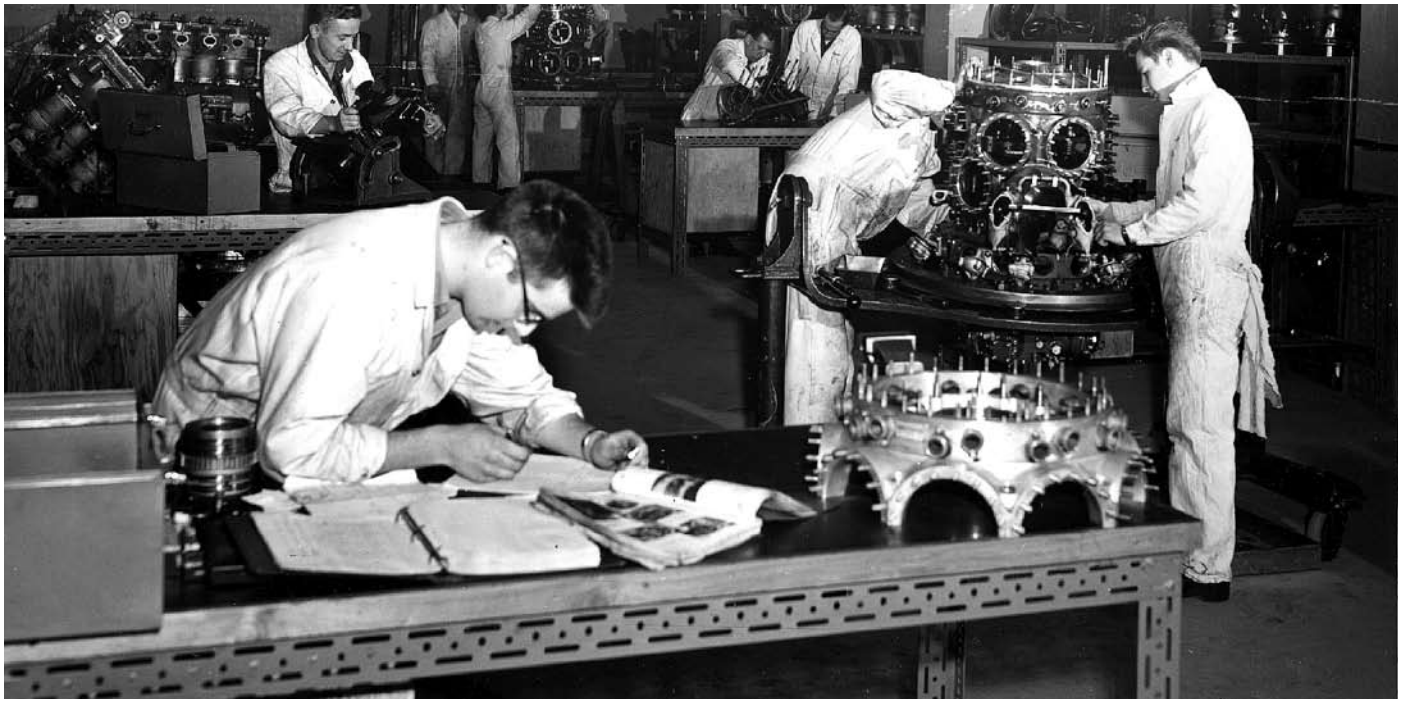
PVI/BCIT Merger

By 1986, PVI and the British Columbia Institute of Technology, which had sat side by side on the Burnaby site since 1964, merged under the BCIT name.

The 1990s saw BCIT embark, with the full support of all levels of government and many industry partners from the private sector, on an ambitious expansion program and by the turn of the millennium, in addition to the Burnaby and Sea Island facilities, the institute included a downtown Vancouver campus and a Marine Training Campus on the North Vancouver waterfront.

By 2000, that once spacious Sea Island hangar was becoming crowded, and with the aerospace industry upping the technological sophistication of all facets of aircraft and airports on an almost yearly basis it was clear that it was time to build a new facility, one that would serve BCIT, its students, and the aerospace industry well into the 21st century.

Students work on the latest engines at the Federal Provincial Trades and Technical Institute (FPTTI) at the PNE grounds in Vancouver. The FPTTI was the predecessor of BCVS. Photograph dated March 6, 1958.



The perfect location was found and purchased by BCIT—a five-hectare plot on Cessna Road, almost directly underneath an airport flight path. Following that purchase, and in just a few short years, the stunning BCIT Aerospace Technology Campus has become a reality.

Opened in September 2007, the ATC is a masterstroke in not only architectural design, but also in continuing to use the teaching techniques fostered by the Aircraft Apprentice Scheme.

From its humble beginnings that started with a small course schedule of engine maintenance in 1957, the new ATC accommodates 1,000 students, more than double the capacity of the previous campus.

The last photo opportunity—Sea Island campus staff pose outside the hangar that was home for 29 years. Photo: Scott McAlpine.

timeline

Fernando Vachon

- **1920s:** *Fernando Vachon (Ferdie) was the youngest of four brothers who in the 1920s were known as "Les Quatres Chevaliers de L'Air" or "The Four Knights of the Air".*
- **1936:** *Started his aviation career at the Curtiss-Reid factory in Cartierville, Quebec.*
- **1938:** *Mechanic for Canadian Airways.*
- **1940s:** *In charge of aircraft maintenance at the Cap-de-la-Madeleine RCAF Elementary Flying Training in Quebec. There, he developed a system to facilitate parking of ski-equipped aircraft in hangars with concrete floors. After the War he worked briefly for Trans-Canada Airlines and the British Overseas Airways Corporation.*
- **1948:** *Canadian Pacific Airlines (CP Air) in Vancouver as maintenance supervisor, inspector, instructor, quality control supervisor, etc., until retirement almost 30 years later. Known for his ingenuity, one of his successes was the design of a system to locate communication failures. Another was his contribution to the construction of a hemodialysis machine to provide dialysis treatment for patients with kidney failure.*
- **1979-1985:** *Ferdie taught at the Pacific Vocational Institute in Richmond, B.C.*
- **2001:** *Inducted to the Quebec Air and Space Hall of Fame.*
- **2005:** *Ferdie Vachon dies.*

Fernando Vachon (right) shakes hands with Premier Bill Bennett during the grand opening of the Sea Island facility in 1978.

timeline
Lt. Col. John Inglis

Lt. Col. John Inglis, in this photo dated 1980, served as the first principal of the British Columbia Vocational School (BCVS), precursor to modern-day BCIT.

- **1924:** *Immigrated to Canada, having completed a degree in Engineering from the Heriot-Watt University in Edinburgh, Scotland.*
- **1929:** *Moved to Vancouver and worked for the next 10 years as instructor for Vancouver Technical School.*
- **1940s:** *Served in Canadian Army as an officer with Royal Canadian Engineers and Royal Canadian Electrical and Mechanical Engineers (RCEME) during the Second World War.*
- **1945:** *Regional director for Canadian Vocational Programs. This was a federal program designed for returning service men and women. Programs were gradually phased out and replaced in the 1950s with grants for the establishment of provincial training centres.*
- **1949:** *Vancouver School Board built and operated Vancouver Vocational Institute (VVI).*
- **1951:** *Appointed Night School principal of VVI and assistant to director of Adult Education for Vancouver School Board*
- **1955:** *Overflow of apprenticeship classes for VVI housed at Pacific National Exhibition (PNE) in Vancouver.*
- **1957:** *Program taken over by the Provincial Department of Education and renamed Federal Provincial Trades and Technical Institute (FPTTI).*
- **1958:** *Appointed principal of FPTTI.*
- **1959:** *B.C. provincial government announces plans to establish permanent vocational school in Burnaby.*
- **1960:** *British Columbia Vocational School officially opened June 29.*
- **1960-1966:** *Served as the school's first principal until his retirement.*

Photograph shows aerial view of the British Columbia Vocational School's (BCVS) buildings in 1963. The building of the school took place in phases and upon completion of the first buildings in 1959, the welding classes were the first to move into the new premises. Other classes such as carpentry, steam fitting, sheet metal, and boat building had moved in by early 1960. The BCVS officially opened on June 29, 1960, with Premier W.A.C. Bennett conducting the official opening. In May 1961, the provincial government provided funds for further expansion and the second phase of building was completed in late 1963, which allowed those classes remaining at the Pacific National Exhibition to move in.

New BCIT Campus Spreads its Wings at YVR

By Larry Berg

Fall 2007 has a special significance for Vancouver International Airport (YVR) because of the opening of British Columbia Institute of Technology's (BCIT) new Aerospace Technology Campus on Sea Island. The new, 28,300-square-metre, $77-million facility is Western Canada's premier aerospace centre. It features a 3,700-square-metre, glass Honeywell Aerospace Education Hangar that can accommodate up to 20 training aircraft, including a Boeing 737-200.

The Airport Authority knows that education is an important investment in the future and we have supported the construction of the new campus through participation on its Aerospace and Technology Campus Cabinet, donations, and agreements on lands and leases.

BCIT has long been a partner to aviation in B.C., providing support to the aerospace industry in resolving problems and developing new technologies. Employers throughout Western Canada rely on BCIT for skilled graduates, and the school has earned a reputation as Canada's premier polytechnic.

In 1978, BCIT established its first campus at YVR. Like YVR, the school has demonstrated its commitment to remaining on the leading edge. The new campus will build on this reputation; it features new technologies and simulators, and will provide global access for collaboration with industry partners, such as YVR, in the development of applied research.

The building features unique architecture with a series of distinctive, interconnected geometric forms that create a natural flow of students and faculty through the many classrooms, workshops, common areas and the impressive new hangar. The massive doors of the hangar are designed such that they can be manually opened and closed by a single person.

Aerial photograph of YVR's completed west chevron. Lower left two bridges will accommodate the new A380 Airbus. Photo: Jim Jorgenson.

Preparations for the building's opening began in July 2007, when the Airport Authority worked with BCIT to coordinate the relocation of 12 aircraft from the school's existing Aerospace Technology Campus on the south side of YVR. The aircraft were towed through parts of the South Terminal, across Russ Baker Way and into the Honeywell Aerospace Education Hangar.

We're pleased to support BCIT's new Sea Island home because we recognize the school's important role in providing advanced skills training in the areas of aircraft maintenance engineering, and airport and flight operations. Already the largest aerospace training school in Canada, the new facility increases BCIT's capacity to 1,000 students, roughly double the capacity at the old campus.

The expanded BCIT facilities reflect the increasing demand for air travel and our industry's growth, which relies on the skilled employees who provide the technical and operational expertise that makes YVR's some 750 daily take-offs and landings possible.

In addition to celebrating the opening of the new campus, BCIT is marking 50 years of aerospace training, having furnished the industry with more than 5,000 job-ready graduates over the decades.

Congratulations, BCIT, from all of your friends at YVR.

Larry Berg is president and chief executive officer, Vancouver Airport Authority.

economic impact

A Strong and Vibrant Aerospace Industry

B.C. is a major component in Canada's position as the world's fourth largest aerospace-services provider

On the morning of September 11, 2001, when four passenger airplanes slammed into the Twin Towers, the Pentagon, and Pennsylvania farmland, the world, as we knew it, changed forever.

Nowhere were these events more profoundly felt, from an industrial sector point of view, than the airline industry.

The first shockwave hit in the hours and days following the terrorist attacks when planes were grounded, initially by a no-fly order, then by the palpable and lingering reluctance of the travelling public to hop aboard a jetliner. Heightened airport security, to the point where passengers were spending twice as long in lineups as they were in the air, didn't help matters.

Airlines cancelled plane orders and manufacturers instigated a number of layoffs.

By spring 2003, just when public fears about airline travel were being allayed, an outbreak of severe acute respiratory syndrome (SARS) caused the United Nations' World Health Organization to issue a rare, emergency travel advisory to international travellers, which negatively affected air travel once again.

Reaching New Heights

The aerospace industry flew through that three-year 'bad weather' window and by 2005, the global airline industry showed signs of not only gaining altitude,

but also reaching new heights.

Today, aircraft orders are coming in faster than many manufacturers can fulfill. Demand is fuelled by emerging Asian markets, soaring orders for business jets, particularly in the United States and Europe, and military orders that have climbed steadily each year in a post-911 world.

This upswing in the global aerospace industry is also reflected in the Canadian aerospace industry.

In 2005, the Canadian aerospace sector posted sales of $21.8-billion, had exports of $18.5-billion and employed 75,000 highly skilled, well-paid workers. All of which makes Canada the world's fourth largest aerospace-services provider.

British Columbia figures prominently in the aerospace industry with annual revenues of $1.25-billion in the manufacturing and maintenance sectors, some 400 companies directly involved in the industry, and an employee roll of 10,000 that represents an annual payroll of $426-million.

In recognition of the aerospace industry's importance as an economic driver, the federal government launched a new research and development initiative in April 2007 to promote excellence and accelerate innovation in Canada's aerospace, defense, security, and space industries.

The Strategic Aerospace and Defence Initiative (SADI) will see the federal government invest $900-million over the next five years in support of those industries. A risk-sharing partnership, companies will invest three or four of their own capital for every federal dollar received under the SADI framework.

Keeping Aerospace Companies in Canada

According to Peter Boag, Aerospace Industries Association of Canada CEO, the federal research and development program isn't about keeping Canadian aerospace companies in business, it's about keeping them in Canada.

"Without the research and development investment leverage provided by the Defence Industry Productivity Program, Technology Partnerships Canada, and now SADI, the business case for investment in Canada wouldn't stand up to that of the United States, Europe and, increasingly, Latin America, and Asia," said Boag. "Their governments place a high value on a strong and vibrant aerospace industry and are prepared to pay for it. Uncertainty is a defining characteristic of aerospace research and development, where it often takes seven to eight years before research and development output enters the market and produces investment returns."

Just as the federal government has taken steps to nurture and support this vital, high-tech industrial sector across the country in the past few years, British Columbia's provincial government has also provided considerable support, resources, and financial assistance to the local aerospace industry.

And the private sector has taken notice as B.C. companies have landed lucrative contracts from global industry players.

For example, in 2005, Kelowna Flightcraft led a consortium that secured a $1.77-billion military contract to operate the Canadian Forces Contracted

B.C. Aerospace Sector Economic Fast Facts

- *Annual revenues: $1.25-billion (manufacturing and maintenance sectors).*
- *Portion of production exported: 80 per cent.*
- *Number of firms working directly in the industry: 400.*
- *Number of employees: 10,000.*
- *Jobs range from maintenance, repair, and overhaul of airplanes and helicopters, to space technology, manufacturing, engineering, and special processes.*
- *Notable companies: Avcorp Industries (Delta), Cascade Aerospace (Abbotsford), Kelowna Flightcraft (Kelowna), Viking Air (Victoria), MacDonald Dettwiler and Associates Ltd., Air Canada Technical Services, CHC Helicopter, MTU Maintenance, Epic Data (all in Richmond).*

Congratulations BCIT on your new Aerospace Technology Campus on Sea Island. Your role in providing advanced skills training in aircraft maintenance engineering, and airport and flight operations is an important investment in our industry's future. We're proud to be your partner.

YVR VANCOUVER AIRPORT AUTHORITY

Beyond, Every Day.

Flying Training and Support services program in Manitoba. Abbotsford's Cascade Aerospace won the federal defence contract to provide program management, engineering, maintenance, material-and-information systems support for Canada's fleet of 32 C-130 Hercules Helicopters. And Avcorp Industries made history, when it became the first manufacturing site for Cessna aircraft outside of Cessna's headquarters in Kansas.

At the time of that announcement, B.C. Minister of Transportation Kevin Falcon said, "We are very much encouraged by the announcement of 150 new jobs in a high-skill technology sector right here in British Columbia."

He also noted that the continuing expansion of B.C.'s growing aerospace manufacturing sector was further evidence of the booming British Columbia economy.

Despite this recent growth, the province's aerospace industry is quite mature. The average age of a B.C. aerospace company is 22 years, and only seven per cent of aerospace companies currently operating in the province have been on the scene less than five years.

However, as BCIT's new Aerospace Technology Campus (ATC) prepares to opens its doors to students, the province's booming economy is proving to be a double-edged sword.

1,000-Student Capacity

A driving force behind the initial call for a new aerospace campus was student waitlists. With a capacity of just less than 400 students per year, BCIT's aerospace hangar was bursting at the seams a few years ago, and so plans were launched to build the new campus.

Fast-forward to 2007 and a booming B.C. economy that is starved for workers, particularly in the construction sector. With massive infrastructure projects, such as Vancouver's rapid transit

Canada Line, a still-strong housing sector, and the construction associated with the Vancouver-Whistler Winter Olympic Games scheduled for 2010, many would-be aerospace program students are opting for employment, since jobs are plentiful and remuneration is high.

For now, the booming B.C. job market has affected the increase in enrollment numbers projected for the first year of the ATC. However, BCIT administrators aren't worried, since the 1,000-student capacity of the new, state-of-the-art facility means that once those B.C. construction jobs shrink from their current high numbers—as they are expected to do following the 2010 Olympics—there will be plenty of room for those students looking to enter the highly skilled, well-paying aerospace sector.

And that is critical to the B.C. aerospace sector as the demand for trained workers continues to be one of the main issues companies must address.

"The single biggest challenge facing the aerospace industry today is finding enough skilled people to support industry's continued growth and diversification," said Karin MacMillan, executive director Aerospace Industry Association of British Columbia (AIABC). "A home-grown supply of world-class graduates is exactly what the B.C. aerospace industry needs to fuel its growth, now and into the future."

Retirees and New Hires

In its March 2006 study on B.C.'s aerospace labour market, the BC Aerospace Consortium reported that at that time there were an estimated 575 vacancies in the province's aerospace sector, a figure representing seven per cent of the industry's employees province-wide.

The report, prepared by Vann Struth Consulting Group, also projected that, "Nearly 2,000 B.C. aerospace workers, representing 23 per cent of the sector's current workforce, are expected to retire over the next 10 years."

It concluded, "Combining the net increase in the number of retirees, there is a total demand for an estimated 835 new hires per year for the next 10 years. This includes about 580 hires in skilled aerospace occupations and 255 hires in other occupations."

In other words, in the next decade or so approximately 8,350 new workers will be required to maintain B.C.'s emerging role as a place of excellence for the global aerospace industry and also as a major economic driver of the province.

"The new campus is a tangible manifestation of the Government of B.C.'s desire to sustain and grow an aerospace industry in British Columbia," said Avcorp Industries president, Paul Kalil. "It also provides an important signal to potential aerospace workers that this is a growing, vibrant sector and is worth committing to.

"An immediate impact would be the provision for training foreign students, who may prefer Vancouver to a training facility in the United States. Ultimately, assuming local maintenance repair and operations companies hire graduates from the program, we could see an influx of the latest model aircraft for maintenance work."

With the September 2007 opening of the Aerospace Technology Campus, BCIT is ready and able to meet that demand for highly skilled workers. With cutting-edge training equipment and a dedicated and knowledgeable instructor base, the new ATC is ready to take British Columbia well into the 21st century.

facility

Groundbreaking 21st Century Campus

Flowing form follows 21st century function in the inspired design of this aerospace centre of excellence

Aircraft of the 21st century are technological and mechanical marvels that incorporate the latest advances in engineering, material science, and computer systems.

Likewise, BCIT's new $77-million Aerospace Technology Campus (ATC) is a state-of-the-art teaching facility that incorporates structural and mechanical advances to meet, and in many ways

exceed, the demands and challenges of current and future aerospace students.

With an estimated 2,000 aerospace workers in British Columbia expected to retire over the course of the next decade—23 per cent of the current workforce—combined with post-2010 industry predictions of job growth in the 900-per-year range, the demand for highly skilled aerospace workers will be met, thanks to BCIT's new ATC facility.

Interactive Learning Environment

The institute's aerospace curriculum, offering a full range of certificate, diploma, and degree programs in airport maintenance, engineering, airport management, and flight operations, has long been considered world-class. With the opening of the new ATC, BCIT now has an excellent facility to match.

Just as the BCIT Aerospace Program did in its infancy as the Federal Provincial Technical Training Institute (FPTTI), all stakeholders were consulted during the planning, design, and construction of the new ATC, even before the first soil was turned on the five-hectare site running along the Fraser River and bordering Vancouver International Airport's south runway.

Instructors, industry consultants, and representatives from various levels of government worked together, guided by the common goal of creating an interactive learning environment that immerses students, faculty and visitors in the 21st century aerospace experience.

Incorporating Form and Function

Designed by Kasian Architecture Interior Design and Planning Ltd., the 28,300-square-metre facility is, like a massive jetliner at takeoff, simply breathtaking.

"To overcome the specific project challenges,

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Kasian's mandate was to facilitate the collaborative design process with BCIT's stakeholder group, project managers and the consultants, which led us to formulate successful and creative solutions," said Wojciech Brus, Kasian's principal-in-charge of the project.

The first and most immediate of those "challenges" Brus referred to was the rather constricted spatial area the ATC campus needed to fit into. This not only included the north-south, east-west dimensions of the triangular property, but also a cap on the building's height—YVR's south runway flight path is mere metres above the facility.

Two-dimensional space was limited by the Fraser River's winding, environmentally sensitive area to the east, the Vancouver airport's property line to the south, and a major suburban roadway to the west.

Rising to these challenges, and many more that surfaced as the project proceeded, Kasian's architects worked with MKT Development Group's project management team and Ledcor's construction management team to create and construct an organic set of geometric buildings that play on the flowing lines of the river and the aerodynamic spirit of aviation.

Other companies involved in the creation of this groundbreaking 21st century campus included WSB Consulting Structural Engineers (structural consultant), MCW Consultants Ltd. (mechanical/electrical consultant), Perry and Associates (landscape architect), Trow Associates (geotechnical engineer), and Metro Testing Laboratories Ltd. (material testing and inspection).

"The result is a building that incorporates function and style and is in harmony with the adjacent river, flights paths and roadways," said Brus.

The result of those companies' combined efforts is also, in a word, stunning.

Central Hub

Three 'wings' meet at a central hub, a Stonehenge-like, ethereal space created by huge, three-storey-high

concrete pillars that are highlighted by a floor-to-ceiling glass wall that reveals the ATC's crowning jewel—a 3,716-square-metre hangar.

The glass hangar accommodates the program's 20 training aircrafts, including a number of helicopters and a Boeing 737 donated by WestJet. The massive, south-facing doors of the hangar are designed in such a way that they can be manually opened and closed by a single person.

Lining the north end of the hangar are workshops, affording students a true feel for what it is like to work in a real-world maintenance facility.

From an architectural standpoint, the hub separates three distinct design zones of the building. A main entry/administrative zone (the three-storey West Wing), an office space/workshop zone along the river (the five-storey North Wing), and a classroom/workshop zone (the two-storey South Wing) that includes faculty offices, a cafeteria and a well-stocked aviation library that is open to students and the general public for research and relaxation.

The North Wing, officially known as the Industry Partnership Wing, is partitioned into offices for lease that are designed to attract aviation-related companies, which the school can collaborate with to create and implement programs that will meet the needs of the multi-billion-dollar global aerospace industry.

The zones off the central hub fall into two categories—loud and quiet—with the hub serving as an architectural sound break between the hangar/workshop and the classroom-administrative zones.

Considering the ATC at its southern point stands just 12 metres below the YVR flight path, sound insulation, particularly in the classroom and office areas, was integral to the design's overall success.

To address that overhead aircraft noise and to dampen traffic sound from busy Russ Baker Way, Kasian achieved


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exceptional acoustic performance by using acoustic tiles in the roof and specialized glass to mitigate the impact of sound within the interior spaces.

"Our approach was to design a school that delivers the best learning experience possible and truly engages students in all aspects of aircraft maintenance and repair," said Michael McDonald, principal at Kasian and concept design architect for the ATC.

Green and Sustainable Strategies

While the architectural firm needed to account for airport and roadway noise, it also had to conform to strict guidelines when considering the 'footprint' of the ATC.

The land on which the campus is built is 'red-lined', which means it is designated as a prime natural habitat. So, Kasian set the building well back from the delicate river's shoreline to create footpaths and trails for students, faculty, and visitors. Likewise, a greenbelt buffer of trees and bushes was left intact to form a natural break between the Fraser River and the campus.

Taking that 'green' and sustainable notion further, Kasian employed a geothermal heat pump strategy to serve as the primary heating and chilled water system for the entire campus. The ingenious system utilizes the hangar's massive slab as a radiant heat source with air-to-air heat recovery that provides warmth to adjacent shops and classrooms.

Another benefit of the heating system is that it does not use large amounts of ductwork in the ceiling, so height—remember that flight path overhead—could be reduced between floors.

Other nods to green design include low profile, low-glare, high-efficiency lighting, and electrical subsystems in the buildings.

And to save water, MCW Consultants chose a fire-suppression system that injects compressed air, filled with a concentrated material to make foam, into the pipes.

Once the challenge of designing and fitting the required elements of the campus into the 12.2-acre site were completed, MKT was given the daunting task of bringing Kasian's architects' blueprints to life. This is where the challenges really began.

Lightweight Structure

The first thing project managers MKT and Ledcor had to deal with was mud. And plenty of it.

Given the Fraser River's proximity to the campus and Richmond's below sea-level nature, the site required preloading with truckloads of sand and the pile driving of many pillars to stabilize the site for construction.

"We were also challenged by extreme wind and rain, in addition to the copious amounts of mud," said Ledcor's Dana Butchart, who added that Vancouver's strong market demand for skilled labour also posed a challenge.

In addition, the overall weight of the buildings had to be kept to a minimum. A light building system with cast-in concrete elements and tilt-up concrete wall panels, designed as much for durability in the workshops as for their architectural features, was utilized.

"The use of structural steel for

the majority of the facility provided a lightweight structure to reduce foundation loads, as well as a repetitive structure that was economical and relatively easy to construct," said Kevin Lemieux, principal with WSB Consulting Structural Engineers.

Though appearing as one building, the ATC is actually comprised of seven separate structures independent of each another.

"This was necessitated by the large atrium spaces that interconnect the various zones of the campus," said Lemieux. "The result was that the structures had to function together, but behave independently, particularly because of earthquake design specifications."

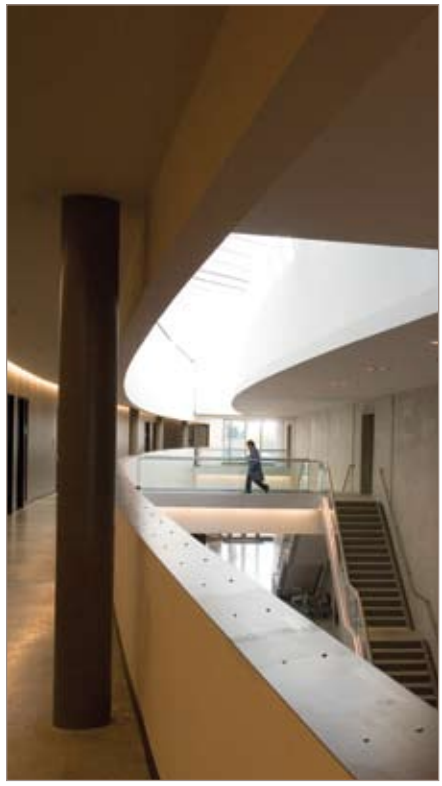
The use of steel brace frames by WSB also reduced the seismic demand on the building and its foundations.

As was the case with a number of contractors working on the new facility, the ATC was one of the most complex jobs

WSB has ever worked on and Lemieux admitted, "It will rank highly within our firm as a showcase of our work."

Cast-in Concrete Pillars

Another challenge to the construction phase, posed by the ATC's unique hub structure, was the "cast-in-concrete elements," which in fact are the massive concrete pillars that encircle the space. The pillars were formed and cast onsite by Ledcor and moved slowly into place to form the Stonehenge-like design of the hub. Ledcor rented special trucks to handle the oversized length and weight of the pillars.



"I can't say the concrete pillar construction method was an industry-first, insofar as casting columns, moving, and installing them would seem a fairly intuitive solution," said Dave Nedelec, Ledcor's senior site superintendent. "What I will say is that the entire method, start to finish, was likely an industry-first. For example, we had to manufacture a shed in which to pre-cast the columns in order to cope with torrential wind and rains. We had to build a movable roof, so that a crane could access the columns and we had to ensure the crane's lift points were engineered and balanced for transport and lifting into place."

An added concern for Ledcor was whether a crane could be used to install the pillars, yet still comply with

the building site's restricted height allowance caused by the overhead flight path. Some consideration was given to performing the heavy lifting at night when the runway was not in use, but in the end a clever adaptation of a crane allowed the pillars to be installed during normal, daytime runway operation.

"We had to modify and engineer the crane to make it high enough to lift the columns, but low enough to fit in the flight path," said Nedelec. "This left us 20 centimetres to spare."

Nedelec noted that input by R4 Contracting on this aspect of the job was "significant."

Concrete and Glass

Although the project and construction managers were aware of many of the challenges at the project's start, one challenge not on the radar, initially, was acquiring the large supply of glass needed.

As the two major materials called for in Kasian's design of the ATC were concrete and glass, a steady and bountiful supply of both was essential for the facility's completion date scheduled for September 2007.

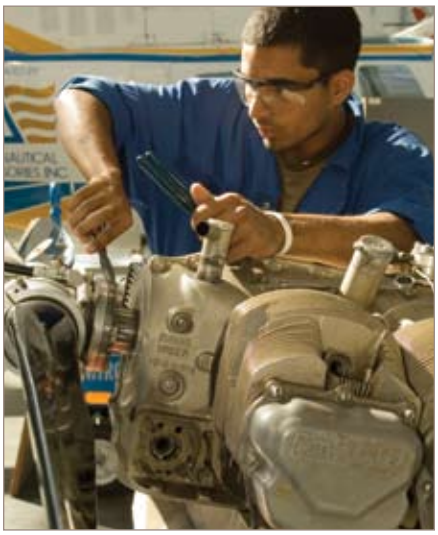
"Because of all the natural disasters that occurred during the years of construction—the tsunami in Thailand, the flooding in New Orleans, hurricanes in Florida—we had a real problem getting glass," said BCIT's Bob Rorison, who credits the contractors with sourcing the hundreds of metres of glass necessary to complete the ATC.

According to AGS, the glazing contract for the project, there are approximately 1,700 glass panels on the building.

The result is an airy and naturally lit interior, reflecting the very essence of the aerospace training facility, one that Rorison regards as a "leap into the next millennium" in terms of an education facility.

Underneath the ATC's sinewy, shiny, taut outer skin, again, like a streamlined jet, is a meticulous design that satisfies all the various functions a centre of aerospace training facility demands.

"Our approach was to design a school that delivers the best learning experience possible and truly engages students in all aspects of aircraft maintenance and repair," said Michael McDonald, Kasian's concept design architect.



campus and there are more than 1,200 data outlet drops for Voice over Internet Protocol (VoIP) usage.

"The new ATC will provide a quality education facility for aviation and aerospace students wanting to build their career in the aviation and aerospace industry," said Rollie Back, British Columbia Aviation Council's CEO. "The facility will instill a strong sense of pride in students for their learning environment, which will be taken to their workplace upon graduation."

Just as it would have been hard for the province's first aviation technology students of the 1950s to comprehend a world in which wireless access and VoIP are seen as essential to the learning process, it is difficult to imagine what the campus of the 2050s will look like.

That is, until you set foot on the new BCIT Aerospace Technology Campus.

'Smart Labs'

Keeping true to the school's long-held adherence to training standards outlined in the Canadian Aviation Regulations, Kasian worked with BCIT instructors to create a learning space that had one foot in the classroom and one on the shop-room floor.

At the heart of this concept is the locating of the workshops on the northern edge of the hangar, so that students can look at the numerous BCIT aircraft there, while turning wrenches on a helicopter engine at their workbench. The workshops, referred to as "smart labs," are equipped with individual power and hydraulic lines—a vast improvement over the previous campus's workshop set-up.

Likewise, the classrooms are outfitted with the latest training computers and equipment that include fully wired overhead projectors and podiums. Wireless access points cover the entire

New Facility Construction Fast Facts

Structure:

- *$77-million facility.*
- *377,662 man-hours.*
- *2,300 workers employed.*
- *28,300-square-metre facility.*
- *Two to five storeys in the Partnership Wing.*
- *1,000-student capacity, more than double BCIT's current capacity.*
- *Exterior is comprised of six-millimetre blue glass laminated to a five-millimetre pane of glass with a 19-millimetre air gap, then six millimetres of clear glass on the inside.*
- *Approximately 1,700 glass panels on the building.*
- *11,000 cubic metres of concrete used.*

Building comprises:

- *22 customized workshops replicating industry conditions.*
- *More than 40 classrooms and laboratories equipped with the latest wireless and multimedia technology.*
- *36 faculty offices.*
- *Lounges, a cafeteria, and a gym.*
- *3,716-square-metre hangar.*

Hangar:

- *Six 12.5-metre doors, which span 60 metres in total.*
- *Hangar doors are powered by two 1.5-horsepower motors, but can also be manually opened and closed.*
- *Can accommodate 20 training aircrafts, which includes a Boeing 737.*

BCIT is located:

- *Directly beneath the flight path of the Vancouver International Airport's South Terminal.*
- *Next to Russ Baker Way, a major thoroughfare in Richmond, B.C.*
- *Adjacent to the Fraser River, an environmentally sensitive zone, which is a prime habitat as defined by the Fraser River Estuary Management Program (FREMP).*

Sustainability features:

- *The shoreline of the site is 'red-lined', which signifies a prime habitat as defined by the FREMP. This requires preservation and enhancement of the natural habitat and the building to be set back from the river.*
- *Erosion and soil stability became a significant influence in the design. Soil densification, pre-loading, and piling using stone columns were determined to be necessary, and building elements were placed in response to ground conditions.*
- *Similarly, flight-path restrictions required by NavCan, coupled with the irregular shape of the site, influenced building form and orientation of building elements. These constraints required the hangar to be placed on the west side of the site with classroom and partnering components of the building sloping west to east from two to five storeys as governed by flight-path height restrictions.*
- *A geothermal heat pump strategy is used as the primary heating and chilled water system for the campus. The system utilizes the hangar slab as a radiant heat source with air-to-air heat recovery providing heating for adjacent shops and classrooms.*
- *The enormous volume of tempered air generated in the hangar provides a source for heating the two levels of workshops on the perimeter of the space. A similar strategy is used for heating the two, large circulation atriums and the hub gathering space, where return air is used for heating prior to high-level exhaust.*
- *Cooling and ventilation is achieved naturally within the hangar through convection, where operable windows provide fresh air through low-level windows on the west and high-level windows on the east.*

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training programs

The Sky's the Limit

With cutting-edge technology and a proven track record for innovative instruction, BCIT's Aerospace Program is a perfect fit with the new high-tech campus

If there is any certainty in the aerospace industry, it is that change happens and it occurs rapidly and frequently. What is currently considered cutting edge in the field of control tower avionics will be old technology in less time than it takes an aerospace student to complete a degree at BCIT's new Aerospace Technology Campus (ATC).

And just as aviation technology, circa 1950, seems almost Stone Age to our modern computer-chipped sensibilities, the new BCIT campus is far removed from the original aviation training classrooms held in barns on the Pacific National Exhibition grounds.

Cutting-Edge ATC Facility

With a student enrollment capacity of 1,000, easily more than double the limit at the former BCIT Aerospace Hangar facility, and featuring "smart" labs and the latest wireless and tele-conferencing technologies, the new ATC facility is as cutting edge as the high-tech aerospace machines and systems BCIT students use.

And that's a good thing, since the global demand for highly trained and skilled aerospace and airport workers continues to grow at an unprecedented rate, particularly in British Columbia.

A March 2006 BC Aerospace Consortium report on the province's labour

market prepared by B.C.-based Vann Struth Consulting Group concluded, "British Columbia's aerospace sector is one of the emerging stars of the provincial economy."

However, it also warned that while the industry is poised for "significant further expansion, it must deal with the critical issue of the availability of skilled aerospace workers."

It is that very labour shortage—identified at the turn of the millennium by aerospace-industry partners from the private sector, government, and educators—that precipitated BCIT to start planning a new aerospace centre of excellence.

In a landmark speech in June 2003, the Honourable Gordon Campbell, Premier of British Columbia, outlined a new educational training network that would be established at colleges across the province. The big-ticket item of the plan was a $16.4-million investment in the ATC.

With the combined assistance of industry heavyweights, Honeywell Aerospace, Raytheon Canada, WestJet, and Bombardier, the proposed ATC took flight soon thereafter and less than five years later is a shining testament to B.C.'s global position as an aerospace-industry training ground.

Range of Degree Programs

In actuality, thanks to the high quality of training programs, taught by equally high-quality instructors, the BCIT Aerospace Program's curriculum—offering a full range of certificate, diploma, and degree programs—has long been considered one of the best, with its graduates working around the world in various capacities in the aerospace industry.

In British Columbia, BCIT graduates are employed at companies such as Calgary-based WestJet, Cascade Aerospace of Abbotsford, Pratt and Whitney in Lethbridge, Alberta, Okanagan-based Kelowna Flightcraft, Avcorp Industries in Delta, and Richmond-based Vancouver International Airport, and Helijet International.

The fact that BCIT's aerospace program is the only in North America accredited to teach both Canadian and European aerospace regulations—accreditation to teach Asian regulations is being sought—also means graduates of the program are well prepared and equipped to work in many countries around the globe.

In many ways, BCIT's new aerospace campus with its flowing design aesthetic and 21st century accoutrements gives

concrete-and-glass 'flesh' to an already excellent curriculum.

BCIT's Bob Rorison called the new ATC a "leap into the next millennium" for the facility, one that was aided by substantial donations from industry players, government agencies, and financial institutions. These donations provided funding for the installation of new training equipment that represents a leap forward into the future of this ever-evolving industry.

ATM Laboratory

At the top of that list of new equipment is an Air Traffic Management and Integrated Security Simulation Laboratory, or ATM Laboratory.

Established with a $2-million investment from the Western Economic Diversification Fund, the ATM Laboratory is the first air traffic controller-training centre for a public post-secondary institution.

"This laboratory provides a vital link between academia and industry, allowing BCIT to build on its strong aviation training program," said Federal Minister of International Trade, David Emerson. "It is vital that Canada has a highly skilled, air traffic workforce that can keep up with the increasing demands of safety and security in our airports."

FIRSTplus Simulation Technology

The centrepiece of the ATM Laboratory, and one that further positions BCIT at the leading edge of aerospace training, is a $2.6-million piece of equipment funded in part by the federal government and donated by Raytheon Canada, which has partnered with BCIT to develop and implement the revolutionary training system.

Called FIRSTplus, it comprises hardware and software that makes BCIT the first post-secondary institution in Canada to have 3D visual tower simulation technology, which provides students with a major advantage in the aerospace field. Three other schools in North America—University of North Dakota, Embry-Riddle Aeronautical University, and Miami's Dade College School of Aviation—currently have such technology.

"This partnership is a source

FIRSTplus hardware and software donated by Raytheon makes BCIT the first post-secondary institution in Canada to have 3D visual tower simulation technology.

of tremendous pride for us," said Raytheon Canada's Mark Desmarais. "We have enjoyed a 50-year heritage in Canada and are thrilled to continue our commitment by investing in the future of British Columbia, BCIT, and the air traffic control industry."

The FIRSTplus Air Traffic Control training tool is a sophisticated three-dimensional training system. It includes a virtual control tower with an "out-of-the-window" display and a virtual radar simulation that mirrors both en route and terminal, air traffic control environments. According to Raytheon, FIRSTplus provides for the most modern, cost-effective air traffic controller training available today.

"The addition of the FIRSTplus tower simulator at BCIT will provide students and industry partners with access to one of the most advanced air traffic management simulation tools available today," said Lane Trotter, Dean, BCIT School of Transportation. "This sophisticated simulator will give students a sense of real-world situations in a tower, which is critical to the new programs being developed at BCIT."

Glass Cockpit Computerized System

Another new piece of equipment on which students will experience real-world situations is a $2.2-million "glass cockpit" donated by Honeywell Aerospace.

Representing the latest in digital avionics technology, glass cockpits replace the traditional array of gauges, switches, and indicators found in a

conventional cockpit with sophisticated computerized display systems. The new laboratory and its equipment positions BCIT as an international leader in the field of avionics and a premier trainer in basic to advanced avionics systems, which allows students to receive a broader-based education. Honeywell has been at the forefront of every major advance in aircraft display technology, since introducing the "Zero Reader" flight director in the 1940s. Today, Honeywell is the leading provider of liquid crystal displays (LCD) for air transport, corporate and military aircraft, general aviation, and space systems.

"We believe Honeywell's investment in BCIT is a means of ensuring future leaders in the field can experience and fully understand the latest technology that can improve flight safety, on-time performance, and operational efficiency," said Trotter.

It's not the first time Phoenix-based Honeywell has teamed with BCIT. Honeywell provides industrial automation equipment from its North Vancouver Process Solutions office for student training, and also employs engineering and technical graduates in its Building Solutions office in Burnaby.

Industry Partners

Honeywell's glass cockpit, and Raytheon's FIRSTplus equipment are ideal examples of how BCIT and industry partners join forces to train workers to step into jobs in the global aerospace industry.

Also, because these two specific training technologies are found in only a handful of elite schools throughout North America, and not many more worldwide, BCIT is able to attract foreign students. There is also interest from industry players, who regard the ATC as the ideal facility for hands-on workshops and training sessions with their own technicians.

All this talk of cutting-edge training

indicates, quite correctly, that BCIT is ready to take on the challenges of training tomorrow's aerospace workers.

In addition to the new, high-tech equipment, the ATC also has a range of earlier technology on which the school has been teaching students for decades—much of that in the form of an impressive aircraft collection. Since the lifespan of most aircraft is in the 20-year range much of the equipment currently maintained and repaired by airline technicians would not be considered cutting edge. By having older systems, combined with new technology additions, ATC instructors have the ability to teach a wide range of real-world situations.

Financial Support

Not all the donations to the ATC have come in the form of hardware or technical support. Financial institutions, such as BMO Financial Group, CIBC, HSBC, the RBC Foundation, and Scotiabank, joined WestJet, Vancouver Airport Authority, Highbury Foundation, and London Air Services as contributors.

BMO's $250,000 donation represented the largest donation ever made by the company to BCIT.

"BMO Financial Group was pleased to add its financial support to this innovative aerospace technology centre of excellence that offers enhanced training and skills development for BCIT students," said BMO's Richard Rudderham, who added that the bank has been a long-time supporter of BCIT. BMO Financial Group will have a teaching area at the new campus designated with its name.

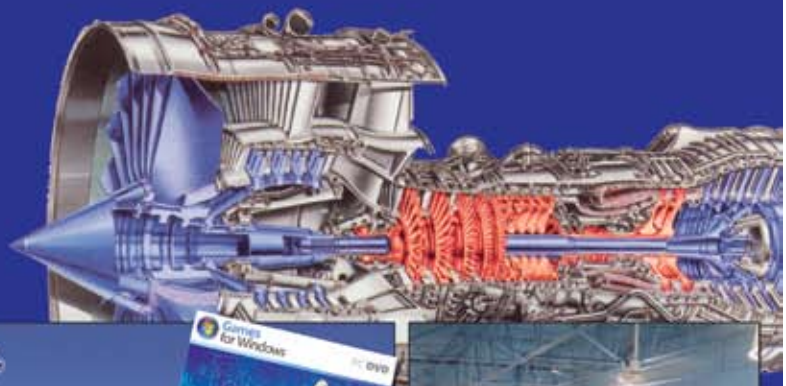
Scotiabank provided a similarly large donation of $125,000.

"We are committed to backing projects like this one because we recognize the need to strengthen the quality of education available to Canadian students

Congratulations BCIT

on your new Aerospace Campus, and

50 years of excellence in Canadian Aviation training!



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and the potential to help make a lasting, positive impact for future generations," said Scotiabank's David Poole.

And HSBC Bank Canada has established a permanently endowed HSBC Aerospace Award to provide funding to deserving students in financial need who are enrolled in any eligible full-time aerospace program at BCIT.

"We hope this award will allow students the financial freedom to focus on their studies and pursue their career interests," said HSBC's Jeff Dowle.

BCIT's aviation and aerospace programs have filled approximately 5,000 highly skilled jobs in the past half-century in this province. During that time, the program has been regarded as a leader in instruction and innovation. Its many industry partnerships have helped BCIT provide relevant training to students, who in turn fulfill the demand for highly trained workers in the growing aerospace labour market.

With the September 2007 move to the Aerospace Technology Campus, and the generous donations of many corporate supporters of BCIT, British Columbia is well situated to continue to provide the skilled labour force needed by the local and global aerospace industry.

With the opening of the new ATC facility, the sky is indeed the limit.

Current BCIT Aerospace Certificate and Diploma Programs

AIRCRAFT MAINTENANCE ENGINEERING

Aircraft Maintenance Engineering provides the student with three distinct career path options:

Aircraft Maintenance Engineer (Category M – Maintenance) is responsible for the release or certification of an aeronautical product (aircraft) after maintenance or inspection.

Full-time – Diploma of Technical Studies

Aircraft Maintenance Engineer (Category S – Structures) is responsible for the assessment, planning and implementation of aircraft structural fabrication and repairs. The Aircraft Maintenance Engineer Category S (Structures) program is fully accredited by both Transport Canada and the Canadian Aviation Maintenance Council (CAMC). Structures technicians are often an integral part of repair crews that include maintenance technicians, avionics technicians and professional engineers. They are expected to precisely follow aircraft fabrication and repair schemes for aluminum, titanium and stainless steel structures, as well as plastics and composites.

Full-time – Certificate of Technical Studies

Aircraft Maintenance Engineer (Category E – Avionics) is responsible for the servicing, repair and modification of aircraft electronic systems and components.

Full-time – Diploma of Technical Studies

AIRCRAFT GAS TURBINE (JET) ENGINE TECHNICIAN

The Aircraft Gas Turbine Technician program is conducted at BCIT's Aerospace and Technology campus at the Vancouver International Airport. It is a hands-on trades training program consisting of 40 per cent theory and 60 per cent practical. Students have access to a wide variety of gas turbine engines, use extensive specialized engine tooling and are taught by qualified instructors. Along with theory studies, students perform tasks ranging from the use of basic hand tools to complete disassembly, inspection and assembly of gas turbine engines. Complex disassembly and assembly procedures require good manual dexterity and mechanical reasoning. An extensive use of technical manuals requires strong reading comprehension skills.

Full-time – Certificate of Technical Studies

AIRCRAFT INTERIOR TECHNICIAN

The Aircraft Interior Technician program contains a mix of theory and practical lessons. Students perform a wide variety of tasks, which ranges from using basic hand tools to specialized procedures for aircraft interior re-finishing. Students disassemble, inspect and repair aircraft furnishings, such as galleys and washroom modules, seats, windows, passenger service units, storage bins and emergency equipment. Training is done at the BCIT Aerospace and Technology Campus at Vancouver International Airport.

Full-time –Associate Certificate of Technical Studies

AIRPORT OPERATIONS

The 16-month BCIT diploma program in Airport Operations, supported and approved by the aviation industry, provides students with a comprehensive, interdisciplinary program of study. This is the only program of its type in Western Canada. To maintain a current, high-calibre standard, the program has an industry Advisory Committee made up of airport and airline managers, airport field staff from Canada's local regional and national airports, and Transport Canada representatives.

Full-time – Diploma of Technical Studies

AIRLINE AND FLIGHT OPERATIONS (COMMERCIAL PILOT)

The program is 64 weeks long and operates for four continuous terms. It is one of the fastest ways in Canada to qualify for a commercial pilot's licence, while attaining a post-secondary diploma. The Airline and Flight Operations Diploma program follows training standards prescribed by both Transport Canada and the aviation industry. It is delivered at the BCIT Aerospace and Technology Campus and at the Boundary Bay Airport.

Full-time – Diploma of Technical Studies

AEROSPACE TECHNOLOGY CAMPUS CONTACTS

Admissions/Student:	604.419.3744
Records: Toll-free (Canada & U.S.)	1.866.434.1610
Aerospace Programs:	604.419.3777
Fax:	604.278.5363
Library:	604.419.3708
PTS/Industry Services:	604.419.3704
OFFICE HOURS:	Monday to Friday 0800-1600
LIBRARY HOURS:	Monday to Thursday 0730-1800, Friday 0730-1500
LOCATION:	3800 Cessna Drive, Richmond, B.C. Canada V7B 0A1

Boeing 737-200 on the move—the WestJet-donated aircraft on its unique journey along Russ Baker Way.

The Falcon 20 was one of 12 aircraft that were towed to BCIT's new Aerospace Technology Campus.

Photos By Jim Jorgenson

moving day

BCIT Aircraft Moved to New Home

It wasn't your typical office move—on the evening of July 28, 2007, the British Columbia Institute of Technology (BCIT) began its trek to a new Aerospace Technology Campus (ATC) by moving 12 aircraft from its existing ATC on the south side of Vancouver International Airport (YVR).

The hard-working moving crew with one of the electro-magnetic powered tugs used in the towing process.

The 12 aircraft, consisting of eight planes, one helicopter, and three ultralight aircraft, are training tools used by students in BCIT's aerospace programs. The aircraft were towed through parts of the airport's South Terminal, across Russ Baker Way and into their new home, the Honeywell Aerospace Education Hangar at the new campus. A flatbed truck transported the three ultralight aircraft.

"While this was just the first phase of our move into the new facility, it marked an exciting time for our instructors and students," said Mike Tomko, BCIT's associate dean of aerospace. "The new facility has new technologies and simulators, which will provide additional training for our students and add to the hands-on skills they learn by working on these aircraft."

The aircraft, a Falcon 20, a Boeing 737, three Aerostar A600s, a Cessna 180, a Turbo Commander, a Piper Navajo, an Alouette helicopter, and three ultralight aircraft, were towed between the hours of 12 a.m. and approximately 5 a.m. to minimize disruption to YVR operations and traffic flow in the surrounding community.

"Months of prep work and planning went into this move," said Bob Rorison, an ATC staff member and the plane marshal for the relocation. "We had tremendous support from many members of the airport and Richmond communities."

The $77-million ATC builds on the foundation of BCIT's recognized leadership in maintenance, repair, and overhaul training. Already the largest aerospace training school in Canada, it offers a full range of certificate, diploma, and degree programs in aircraft maintenance engineering, airport and flight operations. It also provides global

Approaching the spectacular glass-enclosed hangar.

History was made as the first aircraft entered the Honeywell Aerospace Educational Hangar.

After six years of planning and more than a year in construction, Lane Trotter, Dean, BCIT School of Transportation, expresses his pride in a job well done.

access for collaboration with industry partners in the development of applied research.

The ATC has received just over $26-million in support from government, industry, and private sector donors.

In addition to celebrating the opening of the new campus in 2007, BCIT also marked 50 years of aerospace training, having furnished the industry with more than 5,000 job-ready graduates over the decades.

Significant Dates in Aviation History

1500

The Italian artist and inventor **Leonardo da Vinci** made drawings of flying machines with flapping wings.

1783

Two Frenchmen, **Jean F. Pilatre de Rozier** and the **Marquis d'Adlandes** made the first free lighter-than-air ascent. They made the ascent in a hot air balloon.

1804

Sir George Cayley of Great Britain flew the first successful model glider.

1843

William S. Henson, a British inventor, patented plans for a steam-driven airplane that had many of the basic parts of a modern airplane.

1848

John Stringfellow of Great Britain built a small model based on Henson's plane. It was launched but remained in the air only briefly.

1891

Otto Lilienthal, a German, became the first person to successfully pilot a glider in flight.

1896

Samuel P. Langley of the United States flew a steam-powered model plane.

1903

Orville and **Wilbur Wright** of the United States made the first engine-powered, heavier-than-air flights, near Kitty Hawk, N.C. Their first flight achieved 37 metres and lasted only about 12 seconds.

1906

Trajan Vuia, a Romanian inventor, built the first full-sized monoplane, but it could not fly.

1907

Louis-Charles Bregnet of France completed the first helicopter flight.

1909

Louis Bleriot of France became the first person to fly across the English Channel.

1913

Igor I. Sikorsky, a Russian inventor, built and flew the first four-engine plane.

1915

The first flight of an all-metal cantilever wing plane, the Junkers J 1, took place in Germany.

1918

The first scheduled airmail service began in the U.S.

1919

Captain **John Alcock** and **Lieutenant Arthur Whitten Brown** of Britain made the first non-stop aerial crossing of the Atlantic in a modified Vimy IV.

1924

The first all-metal tri-motor transport, the Junkers G 23, was test flown in Germany.

1927

The Lockheed Vega, a single-engine transport, flew for the first time. It became one of the most popular transport planes of the 1920s and early 1930s.

1927

American pilot **Charles Lindbergh** made his first solo crossing of the Atlantic.

1928

The Zeppelin dirigible flew for the first time.

1936

Douglas DC3 transport planes entered airline service in the United States. They became the most widely used airliners in history.

1937

English aviation engineer and pilot **Frank Whittle** ran a gas turbine jet-powered engine for extended periods.

1937
Pan American Clipper's first Trans Pacific flight.

1939
The first successful flight of a jet engine airplane, the Heinkel He178 took place in Germany. Engine designer was **Hans von Ohain**.

1939
Pan American Clipper's first regular Atlantic service.

1941
The first British jet-powered flight, the Gloster E28/39, designed and built by **Frank Whittle.**

1942
The first successful operational helicopter, developed by Russia's **Igor Sikorsky.**

1942
The Bell Aircraft Company built the first jet airplane in the United States. It was flown by **Robert M. Stanley** at Muroc Dry Lake, California.

1947
Charles Yeager, a U.S. Air Force captain, made the first supersonic flight, in a Bell X1 rocket plane.

1949
Inaugural flight of the first jet-enginered airliner, the De Havilland Comet.

1952
De Havilland Comets, the world's first large commercial jetliners, began service.

1953
The first turboprop airliner, the Vickers Viscount, began regular airline service.

1953
The North American F100 Super Sabre jet fighter became the first operational supersonic fighter.

1956
A British supersonic aircraft, the Delta Fairey 2, broke the World Air Speed Record.

1958
The Boeing 707 began the first US jet transport service between the United States and Europe.

1968
Russian pilots test flew the world's first supersonic transport plane, the TU144.

1970
The first jumbo jet, the Boeing 747, entered airline service.

1976
The Concorde, a supersonic transport plane built by Britain and France, began passenger service.

1983
A Rockwell Sabreliner became the first plane to cross the Atlantic Ocean with a pilot guided only by a satellite navigation system.

1995
The Boeing 777 airliner, the world's largest twin-engine jet, began passenger service.

1995
American **Steve Fossett** became the first person to make a solo flight across the Pacific Ocean in a balloon.

2005
The largest passenger airliner, the Airbus A380 prototype, is unveiled at a ceremony in Toulouse, France.

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HSBC The world's local bank

BCIT Aerospace Technology Campus
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- WestJet

BCIT Aerospace Technology Campus
"Soaring to Excel" Campaign Cabinet

Chair: **Jerry Lampert**, President and CEO, Business Council of British Columbia
Larry Berg, President & CEO, Vancouver Airport Authority
Graham Clarke, Chair of the Board, Vancouver Airport Authority
Dale Hunt, President, ADHoc Services
Gary Ley, Gary Ley Public Affairs Ltd.
Tim Morgan, formerly Executive Vice President, Operations, WestJet
Sue Paish, CEO, Pharmasave Drugs (National) Ltd.
G. Wynne Powell, President, London Air Services Ltd.
Patrick Reid, O.C.
Donald Rix, Chairman, MDS Metro Laboratory Services and Chairman, Cantest Limited
Daniel Sitnam, President & CEO, Helijet International
Dennis Skulsky, President, CanWest MediaWorks Publications Inc.
Wendy Slavin, Senior Vice President, BC and Northern Territories, CIBC
David Unruh, formerly Vice Chairman and Director, Duke Energy Gas Transmission Canada
David T.Y. Wang, formerly VP and Site Executive, Raytheon Canada

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Jim Reichert, Vice President Research and International, BCIT
Lane Trotter, Dean, School of Transportation, BCIT

AEROSPACE

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Email camea@mts.net
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www.scitechnorth.bc.ca

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www.tc.gc.ca

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B.C. Aerospace Industry Members

Company	Website
ACROHelipro Global Services Inc	www.acrohelipro.ca
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Advanced Hybrid	www.ahausa.com
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ATI Technologies	www.aeroalliance.com
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Axymetrix Quality Engineering Inc	www.axymetrix.ca
BCIT	www.bcit.ca
Camcoat Industries	www.camcoat.bc.ca/
Canadian Aviation Maintenance Council	www.camc.ca
Cascade Aerospace	www.cascadeaerospace.com
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MTU Maintenance Canada congratulates the British Columbia Institute of Technology on its 50th Anniversary and new Aerospace Campus.

The MTU Maintenance Group is renowned for excellent-value engine maintenance. For a quarter of a century, the company has been a reliable partner of many airlines, offering a compelling choice of customized service packages.

MTU Maintenance Canada Ltd. is the North American member of the MTU Maintenance network of companies, the largest provider of independent commercial engine services worldwide. Based in Richmond, British Columbia, the company operates a shop in the vicinity of Vancouver International Airport.

MTU Maintenance Canada holds all OEM licenses required to repair and overhaul GE CF6-50- and CFMI CFM56-3 engines. Apart from accessory repairs in its own shop, the company also offers Engine Accessory and LRU (Line Replacement Units) management services, which play an increasing role in MTU's service offerings.

RICHMOND OVAL

where OPPORTUNITIES take FLIGHT

Congratulations BCIT on the opening of your new Richmond campus as you celebrate 50 years of leadership in aerospace technology!

The City of Richmond has been one of Canada's leading aerospace centres for nearly a century. From 1910, when Western Canada's first flight lifted off from Richmond's Minoru Racetrack, to 2010, when the new Richmond Oval will be home to speed skating for the Olympic Winter Games, Richmond has always reached higher.

With our rapidly growing City Centre and a growing campus of sport and excellence along the Fraser River's Middle Arm, Richmond is poised to fly even higher. To find out about new commercial and office space opportunities in Richmond call our Economic Development office at 604-247-4934.

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