

4. AVIATION & AEROSPACE

The Aerospace industry is a major part of the larger Aviation industry, which encompasses all sectors involved with air transportation. The industry demands high levels of skill, reliability, and responsibility from their workforce. The Canadian aerospace industry has become the fifth largest in the world, producing a range of niche products such as regional aircraft, business jets, small turbine engines, helicopters, simulators and landing gear.¹⁴ In British Columbia there are currently 120 companies in this highly specialized industry.¹⁵



BC Aerospace companies employ approximately 7,000 engineers, technicians, technologists and skilled trades people.¹⁶ Growth in the industry is expected to result in a total of 3,400 jobs openings for skilled occupations in the aerospace industry.¹⁷ Employing highly-skilled trades workers who hold provincial or national certificates, this industry is technology and skills intensive and offers rewarding many career opportunities.



¹⁴ Advisory Council on Science and Technology, expert Panel on Skills. *Stepping up: Skills and Opportunities in the Knowledge Economy*, (Ottawa: Industry Canada), 11.

¹⁵ "Aerospace," *Careers of the Future* booklet by FutureWorks Training Inc., February 2000.

¹⁶ *Ibid.*

¹⁷ AIABC. *Human Resources in Aerospace: A five year forecast of skill manpower needs in British Columbia's aerospace industry*. October 2000.

4.1 Aircraft Maintenance Engineer



Aircraft Maintenance Engineers inspect and record discrepancies following aircraft manufacturing, modification, maintenance, repair and overhaul to ensure an aircraft meets Transport Canada's standards for safety and performance. Their rigorous inspections certify that an aircraft is prepared for flight. Workers with AME designations may work or qualify as Aircraft Assemblers, Aircraft Maintenance Technicians, Aircraft Mechanical Engineers, Aviation Mechanics, and Aircraft Mechanics.



Aircraft Maintenance Engineers are in high demand by BC's aerospace employers. According to a report produced by the Aerospace Industry Association of BC, a total of 1,690 openings are expected for Aircraft Maintenance Engineers between 2000 and 2005. The occupation has 3 subdivisions: Category S, Category M and Category E, which refer to those AMEs specializing in aircraft structures, mechanics or electrical systems, respectively. AME-M is the most commonly sought after classification and fastest growing of the three (57% percent of the new AME jobs will be in this area). As a result, AME-Ms will likely find employment opportunities throughout British Columbia concentrated around major airports.¹⁸



An apprentice-level salary for Aircraft Maintenance Engineers ranges from \$14 -\$24/h. A Journeyman, on the other hand, makes anywhere from \$22 - \$31/h.¹⁹



Currently, BCIT in Burnaby and Northern Lights College in Dawson Creek are the only post-secondary institutions in BC offering Transport Canada approved courses for Aircraft Maintenance Engineers. BCIT's course lasts 16 months. To enrol, applicants are required to have a high school diploma including English or Communications 12 as well as Academic Math 11. The Northern Lights College course lasts 15 months.

¹⁸ *Ibid.* This figure combines the needs for Category E, M and S Aircraft Maintenance Engineers.

¹⁹ *Ibid.*

To enrol, applicants are required to have a high school diploma including a C+ or higher in Math 11 and Physics 11. Graduates of the program are given credit for 18 months of experience, which can be put toward Transport Canada's 48-month industry experience requirement to obtain an AME licence. Four-year apprenticeships are available and can be partially reduced by training programs like those just described. Upon completion of the apprenticeship, individuals must successfully complete an examination by Transport Canada in order to receive their license.²⁰



Future Works Training Inc. has excellent information related to this career on their website at <http://www.fwt.bc.ca>. The Aerospace Industry Association of BC also has an informative website for career prospects in this field at <http://www.aiabc.ca>. A comprehensive list of training requirements for Aircraft Maintenance Engineers can be found at the Human Resources Development Canada website at <http://www.tc.gc.ca/CivilAviation/maintenance/menu.htm>.

4.2 Aircraft Structural Technician



An Aircraft Structural Technician is involved in all aspects of new aircraft construction, from fabrication and manipulation of parts and components, to aircraft assembly according to drawing specifications. An Aircraft Structural Technician may work or qualify as an Aircraft Structure Manufacturing Technician, a General Aircraft Structural Technician or an Aircraft Structural Repair Technician.



Aircraft Structural Technicians are part of an occupational group that has seen employment increase by 24 percent over a five-year period.²¹ A recent survey of 12 BC Aerospace companies forecasts approximately 154 openings for Aircraft Structural Technicians and 201 openings for Aircraft Structural Repair Technicians between

²⁰ *Ibid.*

²¹ Industry Training and Apprenticeship Commission. See <http://www.learnandearn.bc.ca>

2000-2005 in these companies alone.²² As this survey represents only a handful of the total Aerospace producers in the province, this number is conservative.



Aircraft Structural Technician apprentices can expect to make anywhere from \$14 - \$20/h. Experienced Technicians or Journeymen, however, make an average of \$25 per hour and up to \$56,000 annually.²³



Completion of a course recognized by the Canadian Aviation Maintenance Council (CAMC) is required for Aircraft Structural Technicians. BCIT offers a 16-week, full-time program for Aircraft Structural Technicians. To enter the program, applicants must have graduated from high school with English or Communications 12 and Math 11, while passing a BCIT pre-test is also considered acceptable. Some drafting experience is also recommended. The most common path to a career in this field however, is through an apprenticeship. Completion of a minimum of three years experience in the trade is required before a license can be obtained from the CAMC.



More information on a career as an Aircraft Structural Technician can be found at the Aerospace Industry Association of British Columbia's website at www.aiabc.com. Future Works Training Inc. also has useful information related to this career on their website at <http://www.fwt.bc.ca>.

4.3 Gas Turbine Engine Repair and Overhaul Technician



Gas turbine engines are used in jet aircraft and power turbo-prop planes. Gas Turbine Engine Repair and Overhaul Technicians assess, repair, overhaul, test and troubleshoot gas turbine engines. An Aircraft Gas Turbine Engine Repair and Overhaul Technician

²² AIABC. *Human Resources in Aerospace: A five year forecast of skill manpower needs in British Columbia's aerospace industry*. October 2000.

²³ *Ibid.*

may work or qualify as an Engine Shop Technician or an Aircraft Engine Test Operator.²⁴



A survey by the Aerospace Industry Association of British Columbia, including just 12 Aerospace companies in the province, estimates a total of 372 openings for Gas Turbine Engine Repair and Overhaul Technicians between 2000-2005 for these companies alone.²⁵



According to AIABC, Gas Turbine Engine Repair and Overhaul Technicians earn wages that range from a low of \$21/h to a high of \$25/h.²⁶



The Gas Turbine Technician' program offered by ACRO Aerospace itself teaches helicopter engine repair and maintenance. It is a 10-month course consisting of three months of classroom study and seven months of hands-on training. Enrolment standards include high school graduation or equivalent, and successful completion of an entrance examination and interview. The program term is thirty-eight weeks in length and includes theoretical and hands on training, including on the job training (OJT) where the students work on the shop floor along side a technician. A new program for Aircraft Gas Turbine Engine Repair and Overhaul Technicians has recently been developed by BCIT. The 38-week, full-time program is designed to meet industry's needs for basic training and certification within the field. It consists of 40 percent theory and 60 percent practical training. In order to be accepted into this program, applicants must have completed a recognized structured training program consisting of gas turbine repair and overhaul from a community college or company. High school graduation and successful completion of Grade 12 English and Grade 11 Math are also required for entrance. Successful completion of these programs is followed by a three-year apprenticeship, which qualifies candidates for inter-provincial certification from CAMC.

²⁴ *Ibid.*

²⁵ *Ibid.*

²⁶ *Ibid.*



Future Works Training Inc. has excellent information related to this career on their website at <http://www.fwt.bc.ca>. The Aerospace Industry Association of BC also has an informative website for career prospects in this field at <http://www.aiabc.ca>.

4.4 Aircraft Maintenance Technician



Aircraft Maintenance Technicians perform aircraft inspections, troubleshoot, replace defective parts, interpret technical manuals and drawings, test aircraft systems, record problems and actions taken to rectify them, and maintain an accurate statement of the maintenance history of the aircraft. They are also responsible for testing repaired equipment for proper performance, cleaning and lubricating equipment, and other routine maintenance work. Aircraft Maintenance Technicians may work or qualify as Aircraft Engine Technicians or Aircraft Engine Test Operators.²⁷



According to a report published by the Aerospace Industry Association of British Columbia, there will be approximately 202 openings for Aircraft Maintenance Technicians between 2000-2005.²⁸



According to AIABC, Aircraft Maintenance Technician apprentices earn wages that range from a low of \$11/h to a high of \$14/h, while Journeyman rates range from \$19 - \$24/h (or \$49, 600 annually).²⁹



To become an Aircraft Maintenance Technician, one must successfully complete the Aircraft Maintenance Engineer program at either BCIT or Northern Lights College (see Aircraft Maintenance Engineer for details). After obtaining a diploma in Aircraft Maintenance from Transport Canada or one of these accredited institutes, one must complete a four-year apprenticeship and obtain certification from CAMC.

²⁷ www.aiabc.com. November 13, 2002.

²⁸ AIABC. *Human Resources in Aerospace: A five year forecast of skill manpower needs in British Columbia's aerospace industry*. October 2000.

²⁹ *Ibid.*



The Aerospace Industry Association of BC has an informative website for career prospects in this field at <http://www.aiabc.ca>.

4.5 Aircraft Interior Technician



Aircraft Interior Technicians are responsible for inspecting, replacing, recovering, fabricating, upholstering and repairing ceiling, sidewall, cockpit and door panels; replacing and repairing passenger, attendant and cockpit seats and overhead bins and galleys; and lastly, replacing and repairing flooring, drapes, curtains, carpeting, closets, bulkheads, washroom modules and air conditioning ducts. This is a very diverse trade requiring the technician to have a working knowledge of safety, survival and evacuation equipment such as rafts, flotation devices and escape slides. An Aircraft Interior Technician can also qualify for work as an Upholstering Trim Overhaul and Fabrication Technician.³⁰



According to a report published by the Aerospace Industry Association of British Columbia, there will be approximately 104 openings for Aircraft Interior Technicians between 2000-2005.³¹



According to AIABC, Aircraft Maintenance Technician apprentices earn wages that range from a low of \$14.84/h to a high of \$23.50/h, while Journeyman rates range from \$24.47 - \$30.18/h.³²



To become an Aircraft Interior Technician, no diploma is required; however, a minimum of four years experience in the trade and certification from CAMC are still necessary. Moreover, several years of on-the-job training are required to advance in this profession.

³⁰ www.aiabc.com. November 13, 2002.

³¹ AIABC. *Human Resources in Aerospace: A five year forecast of skill manpower needs in British Columbia's aerospace industry*. October 2000.

³² *Ibid.*



The Aerospace Industry Association of BC has an informative website for career prospects in this field at <http://www.aiabc.ca>.

4.6 Air Traffic Controller



Air Traffic Controllers are responsible for the safe, efficient and orderly flow of air traffic both on the ground and in the air. The job is highly complex and demanding and requires competent and practical individuals. The possibility for relocation is one of the many conditions of employment and placement in remote or northern locations is not uncommon. Unlike most other occupations in the aviation industry that are contingent on airline profitability, Air Traffic Controllers enjoy excellent job security.



A total of 127 openings are expected for Air Traffic Controllers in BC between 2001 and 2011.³³



The overall average salary for Air Traffic Controllers in Canada is approximately \$59,500 annually.³⁴ The low average salary is approximately \$30,030 annually and the high average is approximately \$100,257 annually.³⁵



Training for Air Traffic Controllers is provided by NAV Canada in Cornwall, Ontario. The educational prerequisite for training is a high school diploma or equivalent. Entrance standards are extremely high and the training is approximately 8 months. Upon completion, individuals are assigned to either a Tower or a Centre for an additional probationary period of up to 18 months.



The best on-line source of information on careers in Air Traffic Control is on the NAV Canada website at <http://www.navcanada.ca/>. The Canada Career Consortium's *Career*

³³ COPS BC Unique Scenario, February 2003; B.C. Ministry of Advanced Education & HRDC.

³⁴ Canada Career Consortium. <http://www.careerccc.org/careerdirections>. September 16, 2002.

³⁵ *Ibid.*

Directions guide also provides excellent information on careers in this area and can be accessed at <http://www.careerccc.org/careerdirections/>.

4.7 Air Pilot



Air Pilots fly aircraft transporting passengers, cargo and/or mail. Pilots are responsible for checking emergency equipment, flight instruments, radios, electronic equipment and fuel. In the air, they make periodic position reports, calculate and revise flight plans, enter data in a log book, monitor aircraft systems, and locate weather information. Pilots' specific duties vary according to the type of aircraft and length and nature of the flight.



Air Pilots are part of an occupational group expected to see a total of 623 positions opening in BC between 2001 and 2011.³⁶ Almost two-thirds (56.7 percent) of these openings will be due to attrition.³⁷ This occupational group is expected to grow at a rate of 1.7% annually, about as fast as the average for all occupations.³⁸



Air Pilots in the province make an average of approximately \$75,700 annually.³⁹ Salaries for pilots in Canada may range from a low average of approximately \$23,947 annually to a high average of approximately \$129,635 annually.⁴⁰



Coastal Pacific Aviation offers one and two year diploma programs in Aviation Training through the University College of the Fraser Valley (UCFV). One-year programs are much more intensive and require one year of college or university credit for admission (10 university-transfer credits). The two-year programs require secondary school graduation and completion of a private pilot flight test. The training cost for both diploma programs is \$32,000. Selkirk College and Okanagan University College also offer diploma programs for Air Pilots.



The Canada Career Consortium's *Career Directions* guide provides excellent information on careers in this area and can be accessed at <http://www.careerccc.org/careerdirections/>.

³⁶ COPS BC Unique Scenario, February 2003; B.C. Ministry of Advanced Education & HRDC.

³⁷ *Ibid.*

³⁸ *Ibid.*

³⁹ Canada Career Consortium. <http://www.careerccc.org/careerdirections/>. September 16, 2002 Air Pilots are part of the larger NOC occupational group "Transportation Officers and Controllers."

⁴⁰ *Ibid.*