



The Air Cadet Program and Computer Air Simulation Centers

Making Air Cadets Better, Safer Pilots

BY SARAH PUTINSKI

Since Computer Air Simulation Centers (CASC) were introduced as part of an optional training program in many Royal Canadian Air Cadet squadrons across the country, the line between ‘virtual’ and ‘reality’ is often blurred when you see the cadets using the Flight Simulator Software. The realistic flying conditions, the pre-flight preparations and flying lessons make for an amazing all-around flying experience.

From the time when the CASC centers were introduced fourteen years ago, over 2000 Air Cadets have graduated from a program developed to provide Air Cadets with the chance to experience and improve their flying skills without having to leave the ground.

Eight computerized aircraft simulation centres have been set up within proximity to a large number of air cadet squadrons: in North Vancouver at 103 (Thunderbird) Squadron, where it all started; in Aldergrove at 746 (Lightning Hawk) Squadron; in Penticton at 259 (Panther) Squadron; at 396 (City of Prince George) Squadron; in Sydney at 676 (Kittihawk) Squadron, 205 Collishaw Squadron in Nanaimo, and both the Albert Head Air cadet Summer Training Center and the Regional Gliding School in Comox BC.

In 2002, all Air Cadet squadrons in British Columbia received copies of Microsoft Flight Simulator 2002 Professional Edition to kick-start simulator programs. So did squadrons in Quebec and some squadrons in Ontario. In British Columbia, this was the precursor of a strategy to create centers of excellence around the province to encourage flight simulation. Each simulator runs the Microsoft Flight Simulator 2004 software, and the computer is equipped with yoke and rudder pedals to

simulate flight controls. In many centers, high-speed Internet or local area networks allow simulator enthusiasts to connect one simulator to another and fly multiple aircraft with multiple pilots in one session. The Air Cadets have even been fortunate enough to be able to fly simulated aircraft that shares a likeness to the real aircraft owned and operated by the Air Cadet League of Canada.

The Air Cadet League of Canada, the non-profit organization that supports the Air Cadet Program in partnership with National Defence, and the League's parent sponsoring committees have fully embraced the flight simulation center concept. The enthusiasm in the community is encouraging. In Sydney, a benefactor donated all the hardware and software for a simulator when he heard of local plans to build a center. Other squadrons across Canada have had the same experience. Through fundraising and sponsorship at the local level, the CASC program becomes accessible to cadets as part of their optional training program, which usually takes place on weekends aside from regular cadet training.

Once a squadron is equipped, it can download and print lesson plans, logbooks, pilot operating handbooks and technical reference material. From the www.cadets.ca web site, squadrons can even download and install images of popular Canadian Forces aircraft on their simulators. This makes it easy for practically any squadron, anywhere in Canada to get involved in simulation training. And many have. The Air Cadet program has even designed a set of pilot wings bearing a letter "S" for simulator that the cadets can sew onto their uniforms after having successfully completed the course.

Every summer, close to 600 Air Cadets earn their Power or Glider Pilot's licenses at flight schools across the country through invigorating eight-week courses respectively. Being selected to receive a Power or Glider Scholarship to attend summer flight school is a prestigious reward that many cadets aspire to obtain during their cadet careers. Selections involve an interview process, a review of their school marks, and a qualifying exam that the cadets prepare for most of the training year. Instructors have noticed that graduates of the Simulator Program performed better on their Power course, they learned the material more quickly and were overall safer pilots who stood out more than those that did not benefit from the CASC program.

Lt-Col. Steve Deschamps, Commanding Officer of Albert Head Air Cadet Summer Training Center, a pilot himself who got the flight simulator program started within the Air Cadet Program in North Vancouver in the early 1990's says that "Simulator experience allows cadets to pick up the jargon, learn proper radio procedures and develop an 'ear' for cockpit radio communications, understand and become familiar with dashboard scanning and reading of instruments, and learn airport taxi and aircraft maneuvering 'rules of the road'. When they finally begin their flight training in a real aircraft, they are less overwhelmed and far more relaxed when critical elements of flying are being taught."

Before a cadet begins his or her CASC flight, they are required to "sign out" an aircraft, file a flight plan, complete a pre-flight briefing, and perform an aircraft walk around and pre-flight checks before they begin their actual flying lesson. For these cadets, the lessons are serious and require discipline. The cadets wear flight suits and prepare much in the same way they would if they were flying a real aircraft. The Simulators are viewed as a way to learn and improve their skills, and although video gaming is quite popular and most likely plays a part in helping the cadets latch on to the simulators so quickly, the Air Cadets always take their training seriously while still having fun.

Many cadets learning how to fly use the simulators to practise emergency checklists. Emergencies in the air and on the ground require

rapid, cool assessment of the situation and instinctual responses to situations to avert tragedies. The simulator is an excellent place to try out checklists and to see and experience, in a safe environment, concepts that would be dangerous to do in a real aircraft.

For instance, what happens in severe icing conditions? What symptoms alert a pilot to icing? In a real aircraft, an instructor can only talk about the symptoms and explain theory. With a simulator, you can put the aircraft in cloud, drop the temperature and add moisture and there you have it - icing conditions. The aircraft engine chokes and sputters. What do you do? No pilot would ever want to venture into severe icing conditions in a real plane to find out! Many prospective pilots undergoing flying training at Regional Cadet Air Operations at CFB Comox during the summer use our simulators there to pre-plan and simulate actual cross-country navigation exercises before they complete their air work.

Sgt. Byron Broadley, 17, knows all too well, having recently graduated as a private pilot as part of the flying school program. Since last summer he is now a simulator instructor at 103 Squadron. "Teaching others how to fly has made me a better pilot. There is an old adage if you want to learn something, teach it." Says Sgt. Broadley, "teaching flying to other cadets on simulators has made me better understand concepts I learned in the classroom and in the cockpit."

When visiting a squadron or summer training center that uses CASC centers as part of their optional training program, it's easy to see that the Simulators are a highlight of the aviation portion of Air Cadet training. Cadets who have earned their Power or Glider Pilot's wings over the summer are then able to return to their squadrons and maintain their skills with the use of the software. The program helps to strengthen and support teaching points in many of the fundamental areas of instruction. Cadets exercise principles of flight, radio procedures, and air operations, providing practical reinforcement to abstract theories and information.





Simulator software comes with some impressive on-line manuals that supplement and reinforce the material in our standard manuals with graphics, sound and music. Simulator instructors can even 'talk you through' complex training lessons.

Corporal Hirst, 15, used to have a simulator at home and wanted to join cadets because they offered a simulator program. "I got my qualifications in radio and in ground school. Even though Maj. Deschamps said I was too young to fly for real, I am able to gain my skills on the simulator and then take the test as soon as I am old enough. For now I am teaching other cadets here at my squadron to use the yoke and the pedals and I walk them through their flights. It's a good advantage to learn before the real thing, hard to teach simulation but it is fun in the end."

Simulators today allow for detailed actual rendering of terrain and landmarks. Pilot trainees can complete their simulated flights and check

to see if their compass and directional planning is true. Because the simulators can be connected to the Internet, actual weather taken from airport meteorological reports is simulated in the flights. Consequently, the cadets can experience turbulence and unexpected conditions before they actually go flying. A lot of cadets have reported that this has given them added confidence on their solo cross-country flights.

Another advantage of flight simulators is that during the fall and winter months, simulation centers can supplement ground school and allow prospective pilots to see imagery of real cloud formations. Concepts like Variable Omni Range (an aircraft navigation instrument that uses radio waves to guide the aircraft to airport beacons) can be reinforced by trial and error on the simulator without wasting fuel or getting lost. And prospective pilots can try it again and again until they get it right.

Aside from providing the learning benefits, the simulators are easily moved into the local malls where they become instant magnets for recruiting and public relations. Retention of second-year cadets has dramatically improved and squadron numbers have risen steadily in squadrons where simulators were introduced.

This is a good example of how a grass roots idea — started by a local squadron — is changing how we train our cadets at the national level.

Lt-Col. Steve Deschamps is the CO of Albert Head Air Cadet Summer Training Center. He is also a pilot and has been a flight simulator enthusiast since 1983.

Since the Air Cadet League of Canada came into being in April 1941, close to one million young Canadians have participated in the training program. It is estimated that in one way or another, 500,000 Canadians are involved in the Air Cadet Movement today.

Figures received on a regular basis from Transport Canada and the Canadian Airline Pilots Association reveal that one out of every five Private Pilots in Canada at the present time are ex-Air Cadets and 63 percent of the Commercial Airline Pilots flying today got their start in Air Cadets. No statistics are available as to how many Air Cadets join the Canadian Forces, however, it is estimated that 28 percent of the flying, technical and administrative members serving in the "Air Force" today had some form of Air Cadet training. Even more important, the wastage rate among ex-Air Cadets joining the service is almost nil.

The Air Cadet League envisions the Air Cadet Movement being recognized as the best, the most influential, innovative and expert organization - in the world community of youth movements, and being proactive in meeting the changing needs of youth, the environment and the challenges of economic change.

The Air Cadet League of Canada is a voluntary public service organization in partnership with National Defence made up of more than 4000 civilian volunteers who donate much of their spare time to Canada's youth. For more information visit www.aircadetleague.com

With the aim of "Keeping the 'Air' in Air Cadets", the League also operates its own fleet of gliders and light aircraft which provide air experience for cadets in all parts of the country. Probably one of the greatest **honors** of being an Air Cadet is to be chosen as one of the 70 or more young Canadians who travel each year on mid-broadening international trips to the United States, Pacific Rim, United Kingdom and Continental Europe as part of the International Air Cadet Exchange Program.

The Air Cadet program is a national program for young Canadians between the ages of 12 and 18 who are interested in participating in a variety of challenging and rewarding activities to do with aviation, leadership, physical fitness, travel and much more. For more information about the program visit www.cadets.ca →