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RECREATIONAL FLYER

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Illustration



From The President's Desk

Gary Wolf RAA 7379

WE ALL OWE A DEBT of thanks to the contributors to this issue of your magazine. Thanks to (in alphabetical order) Mike Davenport, Fred Grootarz, Richard Legault, Alex Mackay, Barry Meek, and Dan Oldridge for writing their articles, George Gregory for artwork and production of the magazine, Ron Seyffer for printing it at an affordable price, and Dave Evans and his crew from the Barrie-Orillia chapter for bagging, labelling, and mailing. These are the people who work together to maintain communications among owners and builders in Canada.

D-MOTOR FRANCHISE

Dave Hertner of Fisher Flying Products in Dorchester Ontario is also the North American importer of the Belgian-made D-Motor aircraft engines. He is now looking for a company to represent and distribute D-Motor engines in western and northern Canada, from the Manitoba border to the Arctic. Dave Hertner may be reached at dave@


...it appears that these random inspections will be limited to paperwork. Make sure that your logbooks and paperwork are up to date and there should be no problems.

fisherflying.com. 519-933-2055

ROTAX 915 ENGINE UPDATE

The latest variant of Rotax is the 915 iS Turbo which produces 141 hp (takeoff) and 135 hp (continuous) at a weight of 186 pounds. Rotax has now issued a Mandatory Service Bulletin to update the software of the ECU, a change that will improve the diagnostics of the earlier engines. This must be applied no later than the next 100 hour scheduled maintenance check. Details for certified and non certified engines are at info@rotaxowner.com.

TARGETED INSPECTIONS

Transport Canada's latest "safety initiative" is Targeted Inspections, a program that looks very much like a ramp check; details are given in the Aviation Safety Letter. Having checked with TC personnel it appears that these random inspections will be limited to paperwork. Make sure that your logbooks and paperwork are up to date and there should be no problems. 

to the aerospace sciences. The intention of the magazine is to promote education and safety through its members to the general public. Opinions expressed in articles and letters do not necessarily reflect those of the Recreational Aircraft Association Canada. Accuracy of the material presented is solely the responsibility of the author or contributor.

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Above: this very authentic looking N3N-3 seen at Arlington 2018. George Gregory photo.
On the cover: Richard Legault's Nieuport 12.

Werner Griesbeck's Porterfield CF-RKU "Sweet P Field II"



by Mike Davenport

Program. It was competing with Piper's J-3 cub, the Aeronca Defender and Taylorcraft's L-2 for a share of that burgeoning trainer market. While the J-3 was the ultimate winner of that competition, the Porterfield certainly did its share.

angley airport is located in British Columbia's Fraser Valley just 30 miles east of Vancouver and has long been known for training student pilots from around the world. Opened in 1938 to support Trans Canada Airline's system, it was taken over by the Department of National Defense in 1941 as a training field using Tiger Moths and as an alternate for the Operational Training Unit at Boundary Bay. Today, in addition to three flight schools, it is home to over 50 aviation related businesses. These include a large number of helicopter companies and maintenance operations as well as the base for the RCMP Air Service helicopters. There are many private aircraft based there, ranging from antiques to modern turboprops. With upwards of 80,000 movements annually, it can be a pretty busy place.

Located in a private hangar on the west side of the airport in the midst of all this business is an airplane every bit the same age as the airport. This airplane is still performing the duties that it was designed for 77 years ago. How many of us can say the same thing?

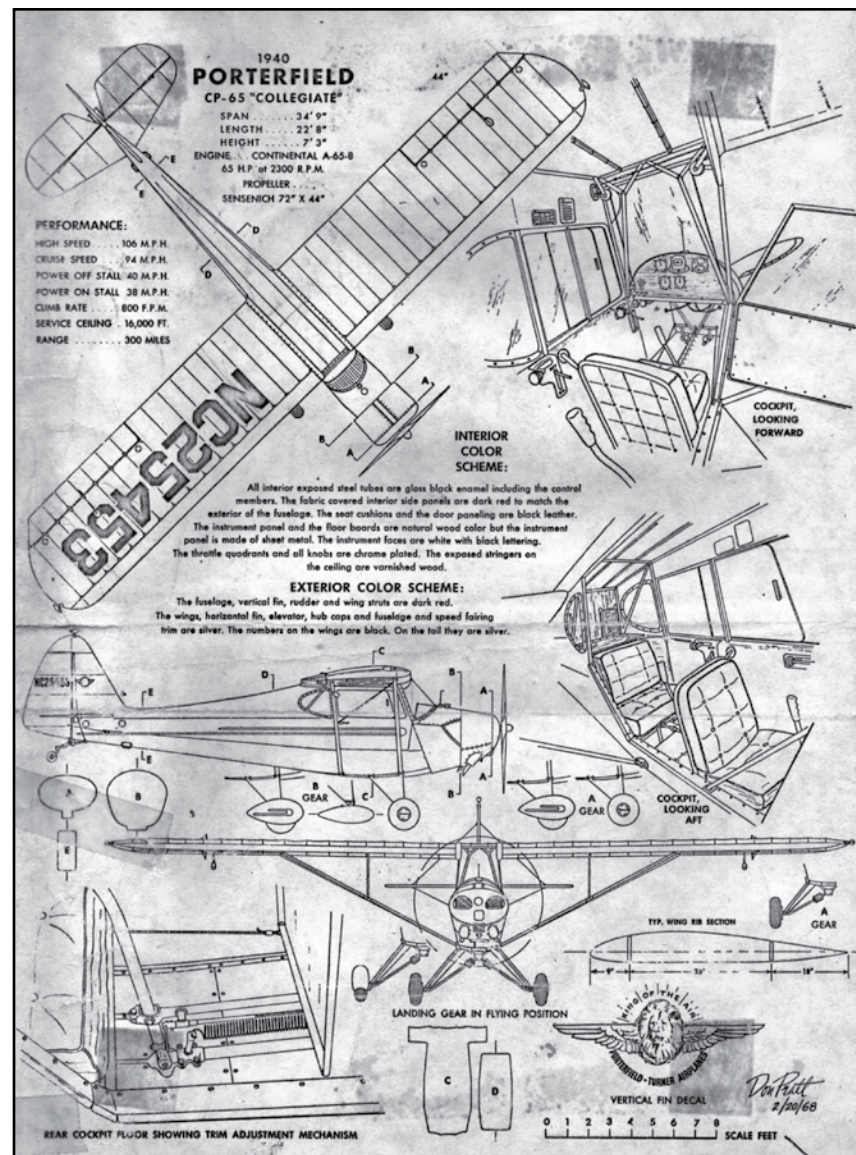
The CP65 Porterfield Collegiate is one of two antique aircraft owned by Werner Griesbeck. Werner has been part of the activity on the airport for many years as an air traffic controller, flight instructor and an aircraft owner and restorer. He has restored 40 plus aircraft including 5 Piper Cubs, the Porterfield, and his Fairchild 24 and assisted in a number of others, including a Beech Staggerwing and my Stinson.

The Porterfield was designed and built in 1939 in Kansas City, Missouri by the Porterfield Aircraft Company as a contender for the Civilian Pilot Training

Construction of Porterfield's two seat tandem aircraft consisted of a simple fabric covered wing with two spruce spars and wooden ribs attached to a rag and tube fuselage mounted on conventional gear. The prototype was originally powered by a 50 horsepower Continental engine. The design was later powered by a variety of engines; in addition to the Continental they included both Lycoming and Franklin as lower cost options. The design was firmed up by May of 1940 as the CP65 powered with the Continental A65 and serial #1029 was one of the approximately 400 built before production ended in 1942. But in the fall of 1941 sales were slow and while #1029 was manufactured on November 5, 1941, it was apparently stored until November 8th, the following year before being assembled and assigned a registration number.

Registered as NC37899, the aircraft began its first career as a trainer in the Civilian Pilot Training Program (CPTP). Built as an FP65, it flew 2167 hours with the Franklin 4AC-176B2 engine which was then replaced with a Continental A65-8 sometime in 1947. According to the logs, during the winter of 43-44 it even spent some time on skis. The first three owners kept the airplane in the eastern US in New Jersey until the third owner moved west to Seaside, Oregon. In 1964, it was again sold, this time into the Seattle WA area. From there, it was moved to Chelan, WA. In 1968 it arrived in Canada and was flown extensively with cross country trips around BC and as far north as Whitehorse in the Yukon. After a particularly hard landing, RKU became a project and changed hands two more times before

Camping gear and a 240 lb passenger added to the excitement and this likely was the prime motivator for the later engine upgrade



Werner Griesbeck obtained it from a local air cadet squadron in Mission, BC. He restored it over a 4 year period between 1976 and 1980. The fuselage was stripped, sandblasted and coated with an epoxy. As the original wings had deteriorated to the point where they were only good to be used as patterns, new spars and ribs were fabricated from spruce. The plane was covered using PolyFibre and painting "Pontiac Red" for the fuselage and "Nevada Silver" on the wings as per the original factory scheme. Werner did make some changes, adding a wind driven generator to provide power for a radio and a transponder, necessary to survive in today's positive control zones. These are located in the left wing root above the pilot's shoulder. No provision has been made for a starter so hand propping is still the order of the day. The gas gauge while simple, is very accurate. Not too much can go wrong with a bent wire stuck in a cork and protruding through the cowl above the 13½ gallon main tank. A friend and FAA inspector in Riverside California, Leroy Blum who also owned a Porterfield helped with a 337 form which allowed the addition of a wing tank. This holds another 7 gallons which increases the range by about 50%. He also reinstalled the factory optional skylight with new Plexiglas. No changes are possible to the interior so it is as tight as it ever was. This is without a doubt the skinniest airplane I have ever seen and you can confirm this by standing behind one to see how little is really there. Since at 5 ft. 5 in. I actually fit in the front seat, it is a mystery to me how anyone much taller and wearing a parachute ever

was able to get into either the front or back seats. (Parachutes were required by the CPTP for spin training). According to Joseph Juptner in his 1980 volume #8 of US Civil Aircraft, "it would recover hands-off from a 6 turn spin in 1 turn or less". Not something I'm likely to try to confirm.

The instrument panel is appropriately basic for a day VFR trainer. The principal instruments left to right are the airspeed, altimeter, magneto switch and tachometer. Above that is the compass and the oil pressure and oil temperature gauges. Under all of that you will find the carb heat control, a skid ball and the cabin heat control. To the left of the panel are the throttle, primer and the fuel shut off. The fuel shut off is a large black lever that is clearly in the way of everything in the off position and folds down and flat against the side of the cabin when on. The throttle and fuel shut off are duplicated in the back for the instructor's use.

Elevator trim is managed through a small crank located under the seat that changes tension on two springs attached to the stick. The mechanical drum brakes are heel operated and at first blush they may seem awkward but in actual use are completely natural in this charming antique.

Since the restoration was completed, RKU has never been a hangar queen and has been flown regularly in BC, Washington and Oregon. In 1981 he took the Porterfield to Oshkosh while dealing with flight issues related to flight at gross weight with the 65 hp engine. Camping gear and a 240 lb passenger added to the excitement and this likely was the prime motivator for the later engine upgrade. Over the years, Werner has shared her with a number of local pilots including myself. I first flew RKU in the 1980's when Werner used it to give me, then a brand new pilot, a tailwheel checkout. Years later, I put a few more hours on it giving Young Eagle rides and flypasts at the Abbotsford Airshow and while I saw the airplane parked behind my Stinson every time I went to my hangar, it would be 15 years before I flew her again.

I am a current "taildragger" pilot with 700+ hours in my Stinson 108 in addition to assorted Cub, Champ and RV6 time. However as the insurance company wanted



Porterfield 65 "Collegiate"

Specifications

Price:.....	1942:USD \$1,500.00
.....	2017: CDN \$25,000.00
TTSN	4740 hours
Wing Span	34.75 ft.
Wing Area.....	168.8 sq. ft.
Chord	5 ft.
Length O/A.....	22.67 ft.
Height	7.25 ft.
Wheel Track.....	5 ft. 10 in.
Seats.....	2 – tandem
Gross Weight.....	1200 lbs.
Empty Weight	740 lbs.
Useful Load	460 lbs.
Baggage Capacity.....	30 lbs.
Fuel Capacity	20.5 Imp. Gal.

a minimum of 2 current hours in the Porterfield before adding me to the coverage; that and common sense said it was time to renew my acquaintance with the old girl while under supervision.

As the supervisor is not only the owner, but a former flight instructor, a retired air traffic controller and by the way, remember that as this is the same guy who restored her, there could be no pressure – right! That same Teutonic predilection for neatness and correctness in all things that got him this far extends well into his training skills. There is no expectation other than perfection. At the end of the day, I crawled back into my Stinson just to see if I actually did know how to fly. Wheel landings that I accept as normal on pavement are not permitted. They must be 3 point regardless of the number of bounces. The Porterfield's narrow gear is quite stiff contributing to some degree of "crow hopping" and surprisingly, once down she will roll and roll, probably right off the end of the runway if left to her own devices. The drum brakes, while used mainly for run-ups will slow you enough to make the turnoff.

Flight in the Porterfield is a delight. To give the old bird a bit more oomph, Werner had used another 337 form to upgrade the engine to a C85-8 from

the original C65. This makes a remarkable difference in climb rate. With two lightweight pilots on board, the 85 hp Continental had us airborne in seconds. Take off power could be applied immediately and did not require the extreme right rudder that I am used to in my Stinson. The ball stayed in the

Porterfield CF-RKU is the only one registered in Canada and a recent search of the FAA's registry web site lists just 68 active aircraft in the US.

centre, more or less, with occasional reminders from the back seat. Visibility from the front seat is exceptional in all directions. Downwind is flown at 80 – 85 mph and final at 70 slowing to 60 over the threshold. Power off on final but be spring loaded to add some if needed. I round out a little too high each time so that my landings are more arrival than touch down. Once down, I add power and do it all over again and again until the GIB (guy in back) is satisfied.

One fine day this past April, after 15 years, I once again went solo in RKU. The Porterfield is even livelier than I remembered it. It got off in half

the space and time and the climb rate at or near 1000 fpm was significantly better than I remembered. The extra 20 hp of the C85 certainly made its presence felt. Without the GIB the ride was also much quieter but the ball wandered just as much. Landings went from good to less good but the

airplane is still useable.

Porterfield CF-RKU is the only one registered in Canada and a recent search of the FAA's registry web site lists just 68 active aircraft in the US. A delightful and rare aircraft. Due to health issues it is once again available for purchase, hopefully by someone who will provide the same level of care that Werner has provided for the last 47 years. *R*

Mike Davenport has been involved with the BC's Lower Mainland aviation scene for decades and has worked with Chapter 85 (Vancouver). He flies a cream puff Stinson 108.



Photo Credit: PAL-V

Later this month, the "world's first flying car production model," the PAL-V Liberty, will appear at Farnborough International Airshow, taking place July 16 to 22 in England.

The biennial public airshow is a trade exhibition for aerospace and defense industries, and this year it will host the PAL-V Liberty and its aviation debut. PAL-V Liberty is the name of the futuristic aircraft that resembles the offspring of a car and helicopter, however the Dutch makers of the machine describe it as a gyroplane.



THANKS TO A FULL ADS-B solution in my plane, this photo shows some traffic about 7 miles ahead at 1 o'clock and 1100 feet below me as I descended toward Yarmouth, NS. The bonus is that he could see me too! I have had ADS-B for two years now and cannot imagine flying without it now. Some skeptics have said they think it will make us spend too much time looking at a screen rather than out the window, but I have found it works like any other "tool" we have in the cockpit. The ADS-B data just becomes part of the routine instrument scan.

ADS-B (Automatic Dependent Surveillance-Broadcast) technology is replacing radar-based surveillance as the primary method for identifying and tracking aircraft. ADS-B can benefit pilots through enhanced situational awareness and improved safety by making weather, traffic and critical safety notices available in the cockpit. It may also provide a better means of getting critical position information to Search and Rescue agencies.

ADS-B is a technology that has the potential to enhance flight safety for all pilots by using GPS satellite signals to precisely pinpoint the position and motion of other aircraft in three dimensions and display them on a screen in the cockpit. With a full ADS-B in/out solution, pilots for the first time may have the capability to see what controllers see. In some cases, these cockpit displays also pinpoint hazardous weather and terrain, and give pilots important flight information. ADS-B applications can also give pilots indications or audio/visual alerts of potential collisions.

There is a very good reason I used the words "can" and "may" and the phrases "have the potential" and "in

ADS-B 101

Dan Oldridge

some cases". In the USA, the FAA has developed a ground-based ADS-B solution that "will" deliver all of the benefits above and many more; not so in Canada. Nav Canada has decided to invest its resources in satellite-based ADS-B technology (Aireon) that will provide little if any benefit to general aviation. Aireon is an aircraft tracking service based on ADS-B technology, but it is far from a complete ADS-B solution, especially for general aviation. Before I delve too far into this aspect of things, let me explain ADS-B in a little more detail so you can get the full picture in order to understand the issues a little better.

Automatic Dependant Surveillance Broadcast (ADS-B) has two aspects to it; ADS-B In and ADS-B Out. As one might expect, ADS-B In essentially receives ADS-B Out signals and displays the information on a screen in the cockpit. There are several aspects of ADS-B Out that impact what you will receive, so let's start by exploring ADS-B Out in a little more detail.

The FAA in the USA has mandated that all aircraft flying in former Mode C only airspace must have ADS-B Out installed by January 1, 2020. Under this mandate, all aircraft will automatically transmit their precise positions, their velocity (both vertically and horizontally), as well as their altitude and other information to controllers and other nearby aircraft. A primary requirement for this is a WAAS-capable GPS receiver in every aircraft to provide the high-integrity location and flight path data for ADS-B networking. Canada has no such rule yet, but Nav Canada recently asked for feedback in regard to implementing an ADS-B mandate for the same in Canada. This past winter, Nav Canada issued a Terms of Reference document that proposed implementation of ADS-B in all controlled airspace and asked for comments from interested parties.

RAA and other aviation groups provided their comments to COPA to be included in their recommendations, which were presented to Nav Canada earlier this year. As a result of all of the feedback, Nav Canada has since modified the proposal to only require ADS-B in Class A, Class B, and Class E above FL600. Implementation is expected in 2021 and 2022. For now, other classes of airspace will

be excluded and only considered on a case by case basis. What will happen beyond 2023 is uncertain with regard to any ADS-B mandate in Canada.

You might think that a mandated ADS-B requirement should not be forced upon GA or you might think that it would be a good thing if all aircraft had ADS-B in them. Either way, you are probably right!

The main issue with ADS-B in Canada is that Nav Canada is relying strictly on Aireon to provide satellite-based coverage across Canada. This may sound like a great strategy but the system is only capable of 1090 MHz and is basically receive only. This means that although ATC will be able to track all of the ADS-B 1090ES traffic in Canada, there are none of the great value-added services available in the USA on their ground-based system.

The critical difference here is that the FAA recognized that the best way to get pilots and owners to install ADS-B Out in their aircraft was to supply them with useful information in return. However, more bandwidth was required than the traditional 1090 MHz equipment was capable of handling. So the FAA assigned a new frequency of 978 MHz for the data link to aircraft using “Universal Access” Transceivers (UAT). Even though 978 MHz UAT is actually very limited in terms of where it can fly and what airspace it can use, it applies in the airspace most used by general aviation in the USA.

ADS-B 1090ES used by commercial aviation operates on 1090 MHz over a Mode S transponder called an “extended squitter”. “Squitter” refers to a periodic burst or broadcast of aircraft-tracking data that is transmitted periodically by a Mode S transponder without interrogation from ATC radar. Basically, a “squawk” is a response a transponder makes to an ATC interrogation, and a “squit” is a transmission sent from an aircraft containing its ID and positional information without being interrogated.

1090ES-equipped aircraft are able to display traffic directly from other aircraft with Mode S transponders without the need to rely on ground based systems. FIS-B (weather and data service) is not available to these single band transceivers. To receive FIS-B, you need to have a UAT receiver and be within the coverage area of a UAT ground station.

UAT equipment prices have fallen dramatically in the USA as ADS-B manufacturers fight for their share of the market. Many of those manufacturers have included both UAT and 1090 MHz receivers in their UAT products to

broaden appeal and improve functionality. Often referred to as dual band ADS-B receivers, they can provide UAT users with a more complete traffic picture than those only using UAT.

As you may have already figured out, the excellent FIS-B data displayed on ADS-B UAT is only available when a ground station in the USA is within range of your aircraft. The proximity of most of the population in Canada to the USA has allowed many of us to install ADS-B in our cockpits to take advantage of those services. As mentioned previously, there is no chance in the near future that we will have those same services available from Nav Canada, since their focus is on Aireon and commercial aviation. The bandwidth simply is not there to provide those services on 1090ES and there is no appetite to install a ground-based network in Canada to service the needs of general aviation on UAT.

For now, in Canada we will have to be satisfied with verbal weather reports and other information supplied through Flight Service Stations (FSS) on the phone pre-flight and Flight Information Services Enroute (FISE) by Nav Canada over the radio or cellular network. On the other hand, if you believe that a picture is worth a thousand words, hopefully you are flying near the USA and can take advantage of the weather and traffic services supplied by the FAA.

This map (top, opposite) shows how Lee Coulman and I skirted around the back side of some storm cells as we returned home from a fly-in in May. By using the weather information available on UAT from a ground station in the USA, we could “see” beyond the black wall a few miles off our port side.

This photo (bottom, opposite page) of the storm cell was taken the same time as the ADS-B screen photo shown above. It’s difficult to determine what is on the other side of the cell without a weather display in the cockpit. Fortunately, at about 1000 ft. AGL, we were within range of a ground ADS-B station in the USA, which supplied us with a graphic display of the weather ahead. It is too bad that Nav Canada didn’t have the foresight and motivation to ensure that all GA pilots on this side of the border have this capability too.

As mentioned previously, mandated ADS-B Out will likely only be implemented in Class A airspace and Class E at FL600 and above, then Class B airspace, and so on into the lower areas as time progresses. Class C, D and E con-



Top: the display shows how Lee and Dan skirted around the backside of some storm cells returning home from a may fly-in. Above, a photo of the same storm cell depicted on the display. Photo credit: Lee Coulman.

trol zones and Class E airspace and airways are expected to be assessed on a case by case basis, but no final recommendation has been made as the study material is still being analyzed by Nav Canada.

Thankfully, Nav Canada listened to stakeholders regarding Class C, D and low E airspace as the original proposal to install Aireon capable equipment in all GA aircraft operating in those spaces would have devastated the GA community.


If the revised recommendation is adopted as proposed I hope that as individual airspaces are assessed in the future, Nav Canada will be open to the possibility of installing ADS-B ground stations at those locations to support the

bottom-mounted antennas already installed on many GA aircraft. From RAA’s perspective will also be helpful if we are able to use some over-the-counter solutions in our recreational aircraft rather than the extensive (and expensive) avionics changeovers required in commercial aircraft to meet the 1090ES ADS-B requirements.

In April, Lee and I met with technical and managerial representatives from Nav Canada to discuss our concerns and thoughts on ADS-B in Canada. They were very receptive and offered a number of counterpoints for our consideration, but their position was unchanged, likely because of their vested interest in Aireon and their primary focus being commercial aviation.

As for replacing your ELT, Nav Canada is insistent that Aireon will be the best option for aircraft tracking since satellite coverage is 100%. The problem as I see it is that the 1090ES equipment costs to operate on Aireon will likely be prohibitive for most GA owners and pilots, especially recreational flyers. Possibly moving the transponder antenna of Mode S equipped aircraft to the top of the airframe would allow it to operate well on Aireon, but that has yet to be tested. For now, don’t expect ELTs to be obsolete in the near future.

ADS-B holds great promise and those of us near the USA can attest to the marvel of having weather and traffic displayed in the cockpit. For everyone else in Canada, it will be a while before you can expect those same services, if ever.

Lee and I are exploring other options for ADS-B including privately operated UAT ground stations located at smaller airports. We strongly believe that UAT ADS-B is the best option for GA pilots and hope to continue the fight to get UAT in Canada. On this last point, let me be clear; we do not believe it will be necessary to mandate a solution for GA. Once pilots start using it and realize its great promise, we believe mass demand for UAT ADS-B may be the only thing that will sway the opinion of Nav Canada and we will likely find that mass adoption is inevitable! 

Dan Oldridge is the president of the Kitchener-Waterloo chapter and proud member of RAA Canada. Dan was a career firefighter and Deputy Fire Chief when he retired in 2012, but his early background was in electronics. Since his retirement he built a Just Aircraft Highlander and Zenair 1450 Amphibious floats. He has made a number of interesting modifications to his plane and is a regular contributor to the Recreational Flyer magazine. Dan also writes a monthly newsletter for the KW chapter of RAA and maintains their website at www.kwraa.net.

178 SECONDS

by Fred Grootarz



One Sunday afternoon in October I decided to follow my friend in his 172 from Burlington (CZBA) for a short flight to Kitchener (CYKF). There were some broken rain clouds over the western sky at approx. 2000 ft. Below that was clear unobstructed visibility. My friend took off on Runway 14 and did a right turn to about 270 and aimed for a divided opening between the clouds (through the gap between the escarpment on the west side the airport and the Milton continuation of the escarpment) heading directly towards Kitchener Airport. I saw him climbing through the opening gap and intended to follow him the same way.

However, before leaving the ramp I looked again at my fuel gauges and decided it would be better to top off my tanks at the self serve pumps before flight, just in case I might have to divert to an alternative airport because of weather. By the time I had finished with filling the plane, some 15 minutes had passed and by this time my friend was almost at Kitchener. I should mention that I did not let my friend know over the radio that I decided at the very last minute to first get some more fuel in Burlington.

AVIATE, NAVIGATE, COMMUNICATE AVIATE, NAVIGATE, COMMUNICATE AVIATE

Fifteen minutes later I finally took off from runway 14, also with a right turn out. However, I noticed just before takeoff that that gap between

Burlington Skyway bridge towards St. Catharines. However looking ahead southwest I was facing the solid cloud overcast. At this time I had reached an

There is a 10-15 second delay before your brain realizes you are really in full IMC. During this time you tend to briefly not pay full attention to your attitude and the airplane can enter into an unwanted bank.

the clouds had closed, so I decided to fly southwest towards Brantford and then turn north to Kitchener. I figured that by that time the cloud front would have passed northbound, and by the time I would reach Brantford I would be behind and clear of that cloud front. Just before departure I called my wife to let her know I was flying first to Kitchener and then later back to Burlington. On the television she was watching the live Oktoberfest parade in Kitchener and told me that it was raining in Kitchener at the moment. I acknowledged her observation and told her that by the time I would arrive in Kitchener via the little detour to Brantford, the rain in Kitchener would have passed on and she should not worry that I might get into bad weather.

I took off with a right turn climb out heading directly for Brantford. Looking east during my climb out turn was nothing but clear unobstructed sky, same with anything southeast of the

altitude of 1900 ft and figured that that was the highest I would climb to stay well below the cloud level in front of me. I looked left and I could clearly see Hamilton Airport. I was just outside the northern arc of Hamilton's control zone.

When I turned my head and looked forward again, I had just flown into a cloud in front of me. I looked down and expected to see patches of ground again, as I believed that it was just a very little bit of intermittent cloud. After all, 30 seconds earlier at 1900 ft I clearly was below that solid cloud layer I saw in front of me.

However there was no patchy ground view, nor was I passing through this cloud. Looking left, the solid cloud made Hamilton Airport invisible. I realized that I was surrounded by cloud and indeed in solid IMC!

It took about ten seconds to come to the conclusion that I was in real solid IMC. The first thing that came

to my mind was what I was taught so many times during my flight training and what I heard and read about this dangerous situation. All right I said to myself, I had better do what the instructor had drilled into me for a situation like this: AVIATE, NAVIGATE, COMMUNICATE.

First thing, look at the instruments and don't follow your feeling/ instinct. Level the airplane. Sure enough, the Attitude Indicator showed I was in a 30 degree bank. The Bank Angle Indicator confirmed the turn and the Vertical Speed Indicator showed a slight descent at this time, meaning my nose was pointing slightly earthbound; the perfect set up for a spiral dive to follow. Looking back at the Attitude Indicator, the little red ball was also slightly below the center line. The "You have 178 Seconds to live" poster came to mind. Yup, so far they were correct. There is a 10-15 second delay before your brain realizes you are really in full IMC. During this time you tend to briefly not pay full attention to your attitude and the airplane can enter into an unwanted bank.

Again, my instructor's words flashed through my mind: Your brain will tell you that you are flying level at this time. And it really feels that way. I can confirm that 100%.

Immediately I stopped the bank and levelled the airplane, looking primarily at the Attitude Indicator's artificial horizon I returned to level flight with the little red dot right on that little white center line again. Simultaneously I glanced at the Turning Indicator which had levelled out too, and with my feet on the rudder pedals I made sure the ball was remaining

dead center as well. A quick glance at the Vertical Speed Indicator showed Zero (level flight without any new up or downward trend). The Altimeter now showed 1800 ft. So far so good, I had returned to controlled level flight, but I was still in the clouds, as confirmed by a quick look outside. Immediately my eyes were focused back again on the continuing scanning of the instruments to make sure I maintained my level flight. I did not want to get caught up in anything written further to what was next on that "you have 178 seconds to live" sheet.

Meanwhile my trusty little yoke mounted Avi8or provided me with perfect situational awareness and "a look through the clouds to the ground". That gave me the confidence that I was doing the right thing and on track, if you want to call it that. That was my part of the AVIATE command.

Since I felt somewhat safe at this point I dialed up Hamilton Tower and asked if they could see the moving weather front along the Brantford/Kitchener line. Although he said that he could see only actual precipitation (and not any clouds), by the time I would reach Brantford the rain would have moved north from there, and that I should be behind it if I then turned north towards Kitchener. I didn't tell him that I was already in solid IMC; I was too embarrassed to admit that I had messed up on that. I decided that I had enough of the low clouds around and didn't want to take further chances, so I told Hamilton Tower that I would turn around and fly back towards Toronto and the clear weather. That was the COMMUNICATE part.

I knew that there were several high

towers in the area below me, so before turning around I decided to climb up to a safer altitude of 2,400 ft. My only concern was for possible icing in the clouds. I checked my temp probe sticking out through my left front windshield – no icing. I also checked my installed "icing warning system" on the left wing (that was four strips of black electrical tape around the white leading edge half way up my left wing) – also no icing.

Then I initiated a gentle climb to 2400 ft before commencing a 180° rate 1 turn to head back where I had come from and knew that the sky was nice and clear. After the 180° turn it took several minutes before my eyes caught a small view of ground through the clouds. I did not want to look too long at this welcome sight since I was still flying in IMC without any outside horizon reference at this time. This was the NAVIGATE part.

And then as suddenly as the clouds had first appeared I had the most welcome view of the day, a clear unobstructed view of Hamilton and even all the way to the Toronto skyline! I had successfully survived my first VMC into IMC encounter. Ten minutes later I landed again in Burlington, just as if nothing special had happened during that little flight. I taxied my plane to the hangar and drove home. However there was one important thing I forgot in all that excitement. My buddy in his 172 was seriously worried why he had not heard from me nor had he seen me land. Later that day he called me and gave me (rightfully so) an earful in no uncertain terms. I humbly apologised for not letting him know and thanked him for his genuine concern. That's

what flying buddies are all about, and it was a lesson well learned.

Some conclusions in hindsight:

I had checked the weather prior to driving to the airport that Sunday morning. I was aware of the rain front and associated cloud levels at that time. I then assumed that it would be clear and safe for me to fly just like my buddy did. I knew he always checks the weather thoroughly before flight and he also has a lot more flying experience than I have. He holds a multi-engine IFR rating and his personal minimums are surely well above mine. There is no contest there.

An experienced aviator told me once: "In aviation you must scare yourself from time to time, so you will remember not to do certain things again." This wise phrase stuck with me, and since that time I have added a few other scary incidents to my "not to do" list. I am sure there will be others in the future. I am just glad that I survived my first VMC into IMC and lived to tell about it. I now can vouch firsthand that that TC poster "you have 178 seconds to live" is absolute truth. **R**

Fred Grootarz is the president of RAA Chapter 41 based in Brampton Airport. Fred does an annual tour of Ontario chapters to present Transport Canada approved recurrency seminars for RAA members.

AVIATE, NAVIGATE, COMMUNICATE AVIATE, NAVIGATE, COMMUNICATE AVIATE



D.B. Cooper Won

Because he was FIRST.

Copy-cat bandit Loses to the FBI / by Barry Meek

January 1972. It was less than two months since D.B. Cooper disappeared with \$200,000 in cash after parachuting from an airliner he'd hijacked in Portland, Oregon. Soon, Cooper would become a legend in the Pacific Northwest. He was a celebrated bandit; books were written, songs were sung, and t-shirts were made up, all supporting the hijacker who got away. A Hollywood movie would soon be made about him. Cooper has never been found. It wasn't surprising when a copy-cat bandit tried the same trick soon after. But Richard Charles LaPoint obviously didn't spend enough time in the planning stage of his crime.

JANUARY 20 WAS a sunny, warm day in Las Vegas. Warm enough for the people to be outdoors without jackets. LaPoint was one of the many tourists in town searching for a few winning spins of a roulette wheel. A former army paratrooper (he had never actually jumped from an aircraft), his life was going nowhere since he'd returned from a tour in the Viet Nam conflict. He had an extensive record of petty crimes with convictions for car theft and narcotics use at home in the Boston area. Nobody knew how long he had been planning his hijack, but obviously not long enough. It's likely the Cooper caper was his inspiration.

At about noon that day, he purchased an airplane ticket in the name of John Shane, and took over a Hughes Air West DC-9 on the ground at McCarran International Airport in Vegas. He showed a flight attendant a bag he claimed contained a bomb.

"Let me guess", quipped the flight attendant. "You want cash, two parachutes and a helmet".

"How'd you know that?" asked LaPoint.

"Just a wild guess. And how much cash do you want?" asked the stewardess. D.B. Cooper had used the same method, and the incident was still fresh in everyone's mind.

LaPoint wasn't as greedy as Cooper. All he wanted was \$50,000. It seemed adequate at the time. After the cash was delivered to LaPoint, the fifty eight other passengers were released, and he ordered the pilots to depart for Denver, Colorado.

The authorities were still smarting from the embarrassing situation in which Cooper got away with his cash.

In the short time since that one, the FBI had been doing a lot of homework. Instead of giving LaPoint two normal parachutes, he got special Air Force chutes equipped with emergency locator beacons that guide search aircraft to downed military pilots. And they put two F111 jet fighters in position to tail the DC-9 and watch for his parachute. Cooper had bailed out when no one was looking. LaPoint didn't know he was being followed. When he jumped over north-eastern Colorado from about 12,000 feet, he was hanging beneath a highly visible orange and white canopy.


Colorado is cold in the winter. Up near Denver, the elevation of the high plains is around 5,000' above sea level. There's plenty of snow for the farmers and ranchers to deal with as they survive off of wheat, and dairy and beef cattle. The people are tough, but gentle, kind, all-American folks. LaPoint came down near the town of Akron, a typical small community, supported by agriculture and home to many retired seniors. There's not much reason to go to Akron, Colorado but on January 20, 1972, several law-enforcement agencies, including the army and the FBI, swarmed the area on a manhunt for the airline hijacker.

LaPoint was dressed for the 60 F degree (15 C) temperature in Las Vegas, but was now in weather that was several degrees below freezing. There was snow on the frozen ground in the fields. By late afternoon it was getting dark, and the parachute went unnoticed as it drifted to the ground. But area residents would soon be wondering what all the airplanes and at least one military helicopter were doing near their properties.

Freedom lasted about one hour for

Richard Charles LaPoint. The fighter pilots called in a rough location, and soon small planes were on the scene above that bright orange parachute in a snowy field. Local law enforcement and the FBI were quickly following footprints in the snow, when LaPoint stood up and waved to them, shouting, "Hey, I'm over here". He was in desperate need of warm clothes and was definitely not running from the law at that point.

Eventually, LaPoint faced the charges, most of which were dropped. But air piracy was the big one, and he was convicted without much of a defense. His plan was ill-conceived, to put it mildly. The bomb was just a few highway flares in a carryon bag. The judge gave him 40 years in prison. After only eight years he was released to a half-way house in Boston, and subsequently disappeared from public soon after. He died in 2008, evidently without committing any more serious crimes.

Of course we'll never know how LaPoints hijacking would have ended if he'd thought of it before Cooper pulled it off. Cooper had the imagination and smarts to formulate and carry out the plan. But by following the leader, so to speak, LaPoint became a loser. 

Barry Meek is a commercial pilot who flies summer contracts for various operators in western Canada. He is a retired ambulance paramedic, mountain bike guide and broadcaster. His articles have appeared in the COPA Flight, The Aviation News Journal and the Recreational Flyer. He now resides in Vernon, B.C. and in Lake Havasu City, Arizona.



Bearhawk Aircraft Announces the Formation of Bearhawk Canada

AUSTIN, TEXAS, JUNE 7, 2018 - Bearhawk Aircraft announced today the formation of Bearhawk Canada to further expand its operations in the vast regions of North America. An agreement has been made with Mike Silvernagle in Saskatchewan to represent Bearhawk Aircraft in Canada for sales, service, parts and support of the three models of Bearhawk aircraft kits. Mike Silvernagle will base Bearhawk Canada operations on a private 2,500-foot grass strip in southeastern Saskatchewan where customers can visit to check out the Bearhawk lineup and experience demonstration flights. After having flown all three Bearhawk models, including the 4-Place, Patrol and LSA, Mike's enthusiasm for how well the airplanes fly motivated him to want to distribute the aircraft kits in his native Canada. Mike's background in aviation started in the Canadian Advanced Ultra-Light Aeroplanes (AULA) category. Having built and flown various makes and models, Mike became an instructor for these aircraft. More recently Mike owned and operated a Piper PA18-160 Super Cub, an Aeronca Champ and a Cessna 185. Comparing the Bearhawk line of aircraft to those he had flown previously, Mike exclaimed, "The Bearhawks are much better in many ways, and the benefits of operating in the experimental side of aviation in Canada are favorable when compared to certified aircraft. Bearhawk aircraft offer many advantages for Canadian

pilots who often use their planes to hunt and fish in the backcountry and visit the numerous rough-field and shorter landing strips."

Mike recently purchased a flying 4-Place Bearhawk. He is also nearing the completion of his Bearhawk Patrol quick-build kit project. Mike will follow with the construction of a Bearhawk LSA, also from a quick-build kit. His background in AULA has given Mike an appreciation for the flying qualities of the Bearhawk LSA, which Mike considers to be "The best all-around flying airplane I have ever flown." Mike plans to take the Bearhawk LSA through the approval process for AULA in Canada.

The Bearhawk is a Go Anywhere aircraft that performs a variety of flying activities well. The 4-Place Bearhawk fills a utility and transport role with its large cabin. The Bearhawk Patrol is a tandem 2-place version that excels at accessing remote airstrips. The Bearhawk LSA is a lightweight design that meets U.S. Sport Pilot requirements. Each aircraft shares backcountry qualities that include stable slow flight and higher than expected cruise speeds. All three Bearhawk models feature a Riblett airfoil. According to Bearhawk design engineer Bob Barrows, "These airfoils are the safest available providing good speed and performance in every regime of flight, especially slow flight. After many thousands of hours of flight, the Riblett airfoil, and Riblett modified 4412 airfoil on the original Bearhawk, are the best and safest airfoils available for the type of flying Bearhawks are designed for. In particular, these airfoils eliminate the notorious and abrupt 'moose stall' occurring in low-flying steep turns." Bearhawk Aircraft manufactures high quality quick-build kits for the Bearhawk 4-Place, tandem two-place Bearhawk Patrol and Bearhawk LSA. Remaining part of the Bearhawk Canada team, and supporting Mike Silvernagle, will be Steve Busby of Aerolite, www.aeroliteflight.ca, in Ontario. For more information on Bearhawk Canada, visit www.bearhawkcanada.ca, or contact Mike Silvernagle at mike@bearhawkcanada.ca or 306-740-8803.



Chapter 85 Tours

Murphy Aircraft

Alex Mackay

OUR SPEAKER for the Chapter 85 Awards Banquet this year was Darryl Murphy from Murphy Aircraft MFG, a kitplane manufacturer located in Chilliwack. Darryl gave a superb lecture on the history of Murphy Aircraft and the current state of the kitplane industry. Before he left the Banquet he offered to give us a tour of his factory. We took up his offer - the Chapter 85 tour was on Saturday May 19, 2018.

A glance through the annual Kitplanes magazine's annual homebuilt aircraft directory reveals about 100 different kitplane companies. However, if one limits the count to companies that have been successful for over 30+ years, the number is more like 4: Vans, Zenith, Rans and Murphy's. Murphy aircraft has sold about 2000 kitplanes, starting with the Renegade, a two place biplane, and continuing with the Rebel, a two place bushplane plane and

several 4 place bushplanes, including the Moose and the Yukon. The signature Murphy airplane (except for the Renegade) is a high wing taildragger often with floats. The latest aircraft is the Radical, a heavy duty two place tail dragger suitable for engines up to 220 hp. Murphy's factory is located at the east end of Chilliwack. It's not hard to find the very large building at 8155 Aitkin Road but one has to look for the tiny 'Murphy Aircraft' sign above the entrance door on the southeast side of the building.

Our tour began with a view of a Renegade that was being redesigned to accommodate the 7 cylinder radial engine from Verner Motor in the Czech Republic. The Renegade is a fabric covered biplane with a frame made with specially designed 6061-T6 aluminum extrusions. Murphy kitplanes use a lot of extrusions, the company has invested a lot of money and effort into the design of the dies used to form these extrusions.

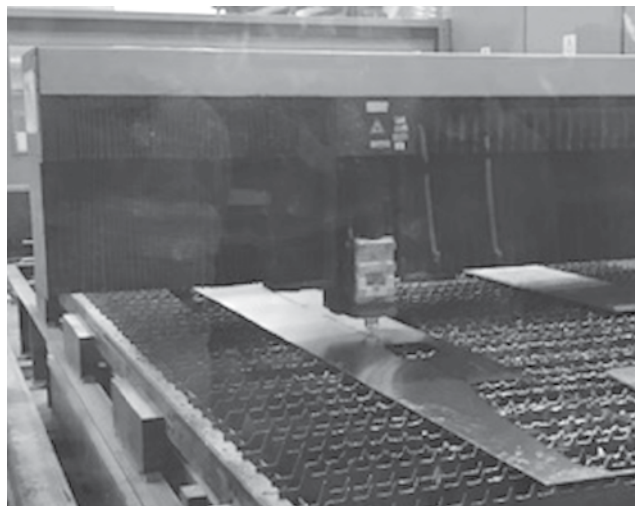
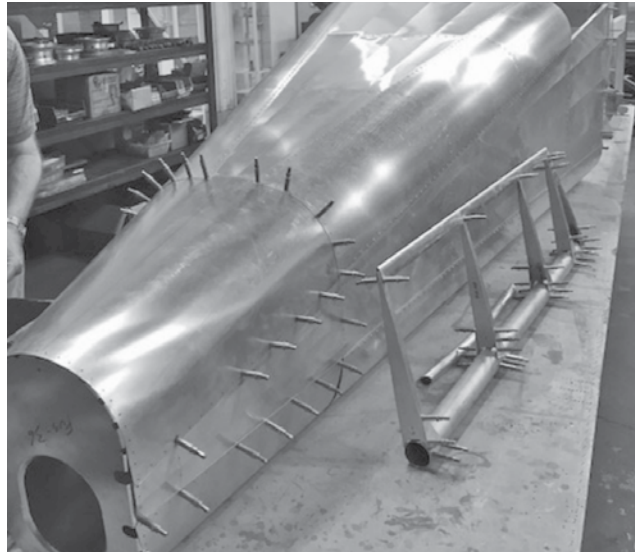
The next stop was at a Rebel that Darryl is building for himself. This Rebel included a few changes designed

to reduce the number of parts (and also the number of different parts (e.g. most wing ribs are identical)) and the weight of the kit. Examples of weight saving measures are skins with built in gussets and skins with longitudinal ‘creases’ at regular intervals which prevent ‘oil-canning’. Apparently the number of parts of the Rebel kit has decreased dramatically over the years. Another Murphy feature is full size plans for some sections of the airplane. These plans include exploded views of complex regions with multiple connected parts. The goal is to minimize the need for an instruction manual.

The shop contains an impressive array of classic heavy duty equipment (including an enormous riveter for building spars, a 14 foot wide bending brake and a ‘monster’ press), a CNC machine that can do a series of jobs lined up on a conveyor belt and a two axis laser cutter. We watched the laser cutter fabricate a wing rib in less than a minute. Then the flattened rib was placed on top of a mold and forced by the ‘monster’ press into the final shape of the rib. It took not much over one minute to go from a sheet of aluminum to a finished rib. The Murphy shop is remarkably versatile- it has produced parts not only for kitplanes but for larger airplanes such as the Beaver, the Buffalo and Sikorsky military helicopters.


Our tour covered not only how kitplane parts are manufactured but also some practical ground rules for kitplane design. Darryl discussed the logic behind choices for wing cross-sections (4415 (Rebel and others) and 23012(Renegade)). The type of cross section determines the extent and direction of lift that has to be produced by the tail. Laminar flow profiles are to be avoided in most kits because they perform badly when dirty. The safety factors of the different components of an aircraft should be not much larger than 1.0 and they should be homogeneous throughout the aircraft. There can be problems if the safety factor estimation is incorrect – this caused grief for another kitplane manufacturer a few years ago. Darryl stressed that in designing kitplanes, weight control is crucial. His rule is that it is worth at least 100\$ to remove 1 pound of weight from the airplane. Some weight loss can be had for free by removing all sharp corners or points in sheet metal parts.

Top: The Rebel fuselage. Note the longitudinal creases in the skin which are designed to prevent oil canning. The elevator (on the right) is remarkably light- it will be fabric covered.
Centre, Two axis laser cutter producing a wing rib. The flat rib is then placed over a mold, covered by a rubber mat, then pressed by a ‘monster’ piston into its final shape.
Right, Erich Munzer and John Macready pose with the finished product.



The Murphy Yukon. Below, The Radical Prototype complete with two bicycle racks.

For the finale, we drove to YCW to look at three examples of flying Murphy Aircraft: the new Radical prototype complete with two bike racks, an 18 year old Rebel on amphibious floats and a Yukon on amphibious floats. All in all, this was an incredible tour; we are very appreciative of the effort extended by Darryl Murphy and his team.

For anyone who wishes to learn more about Murphy Aircraft, there is a lot of information on the company website (www.murphyair.com). For anyone interested in the Radical, I recommend watching a video of Murphy General Manager, Tyler Penner, being interviewed by Dan Johnston of Ultralight Flyer (<https://www.youtube.com/watch?v=3uq0wwxBpss&t=25s>) 

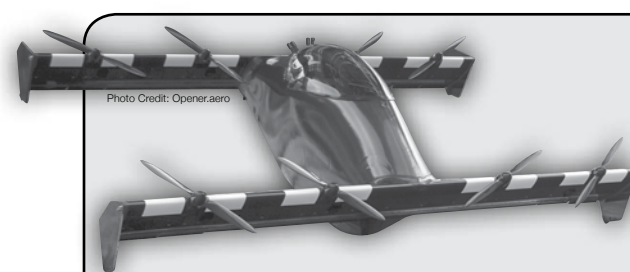


Photo Credit: Opener.aero

NEW ULTRALIGHT VTOL UNVEILED

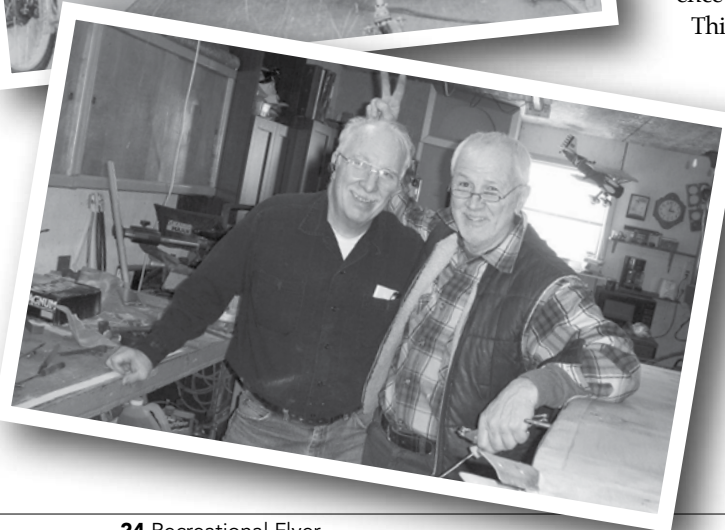
OPENER, Inc. has developed an ultralight, single place, all electric fixed wing VTOL aircraft called the BlackFly. Although range and speed are limited (40 miles at 72 mph) the configuration represents true thinking outside the box. Developed by in Canada by Marcus Leng before relocating to Palo Alto, the entire craft adjusts its attitude to facilitate hovering flight and VTOL operations (tail low) while cruising under conventional aerodynamic lift (tail high) at normal angles of attack. The press release states: "After working collaboratively with Transport Canada for several years, on July 6, 2018, OPENER received permission to operate BlackFly as a Basic Ultralight Aircraft. OPENER hopes to continue to collaborate with Transport Canada to safely and progressively expand the use and operating profile of these uniquely-capable vehicles.

"OPENER's long-term vision is to integrate these highly-efficient vehicles into a rural/urban commuting network. These networks would be powered by renewable energy sources requiring only a fraction of the transportation energy used currently". It's classed a BULA in Canada and Part 103 in the States. For more information and video, check out <https://www.opener.aero>.



Richard Legault's

Nieuport 12



MY dad began building his first homebuilt plane when I was twelve, a Maranda RA14 which he finished it in 1967. In 1968 when I was eighteen I crossed the border and joined the US army hoping to fly helicopters but graduated in helicopter maintenance instead. Volunteer enlistments were for 3 years, so in August 1971 after serving 12 months in Vietnam I came back to civilization and soon got married.

In the mid 70s my dad tackled his second project, a WW1 British single seat biplane replica SE5a which was completed and test flown by a good friend Alain Brassard in 1979. It was a 7/8 scale single seater designed by C.R. "Gogi" Goguillot in western Canada. My father was not a pilot so in the late 70s I took pilot training, first on gliders and then with a freelance instructor in my dad's Maranda. After 100 hours I checked myself out in the SE5a. It was a pleasant biplane to fly but the flaw was that I could not carry a passenger. I swore that later in life I would build a 2 seat WW1 biplane.

In the late 1990's I became aware of the replica of the Nieuport 12 biplane, designed by Graham Lee in Alberta. By this time our kids began to leave home so spare time was becoming available. Realizing I was not getting younger I bought the Nieuport 12 plans thinking it would be a great retirement project, and fortunately my wonderful wife agreed. Until my retirement I contented myself with studying the plans and collecting info from other builders' web sites. By this time so many years had gone by that some who had been building N12s were growing older and had either sold their projects or simply abandoned them. Furthermore I got the sad news that the designer Graham Lee had passed away and with him went contact for support. So there I was alone with rather complicated plans, little experience in homebuilts and a dream to fulfil (left, top).

This Nieuport 12 replica airframe is constructed from aluminum tubing held together with aluminum gussets and blind rivets. The wings have leading and trailing edge aluminum tube spars, and ribs are formed and built up from small diameter aluminum tubing, again with riveted gussets. The covering of all structure is Dacron or Ceconite 102 using Poly Fiber paint products, and I used rib stitching for authenticity.

Father Spirit help

My loving father who introduced me to recreational aviation passed way in 1992, but his spirit must have helped me because

Left, top down: The 7/8 scale SE-5 designed by the late Gogi Goguillot of Chapter 85; The Maranda; the author unpacking the project from the truck; and with Gilles Paradis.

one day as I was browsing through the Copa homebuilt adds I came upon a WW1 biplane project for sale, 75% complete, of a Graham Lee Nieuport. I knew that most of Graham's projects were the Nieuport 11 single seaters. But to my great surprise it was in fact a Nieuport 12 two seater...talk about timing. Then I said to myself it must be somewhere in Alberta or BC far away from my home near Montreal but no, it was available right here around Montreal in St-Lazare. After contact and an inspection with my good inseparable friend Gilles Paradis I bought the project (opposite, second from bottom).

Hangar

At this point I have to say that I am fortunate enough to own a small wood and tin hangar in a controlled airport at Saint Jean sur Richelieu located about 35km from Montreal. My father and another fellow had the hangar built in 1970 while I was away in the armed forces. When I came back to civilization his partner wanted to sell his share so I bought it with my savings. I was 21 at the time and flying was not exactly my priority as I was busy getting my life pieced together with my fiancée after the Vietnam tour of duty.

Friendship

My first helper and good friend is Gilles Paradis. We met a few decades ago when I was flying my dad's SE5a. You see Gilles had finished building a 1/4 scale model of an SE5a when he heard an unfamiliar motor sound in the air near his house. As he went outside, he saw an SE5a on its final leg to land at the airport, so he immediately hopped into his truck and headed there. By the time

I knew that most of Graham's projects were the Nieuport 11 single seaters. But to my stunning surprise it was in fact a Nieuport 12 two seater... talk about timing.

he got there I had pushed the plane into the hangar and closed the doors. Gilles tried all the hangar doors until he got to mine, and introduced himself. He was a WW1 enthusiast and was impressed at being able to touch the plane and began taking photos. That was when our friendship started.

Gilles is an experienced perfectionist...or rather a genius. Everything he makes or undertakes must come out perfect. His saying is "if it is worth doing then do it right". I have to say that Gilles was my mastermind, my inspiration and if it weren't for his commitment to the completion of the project, I would not have finished in time.

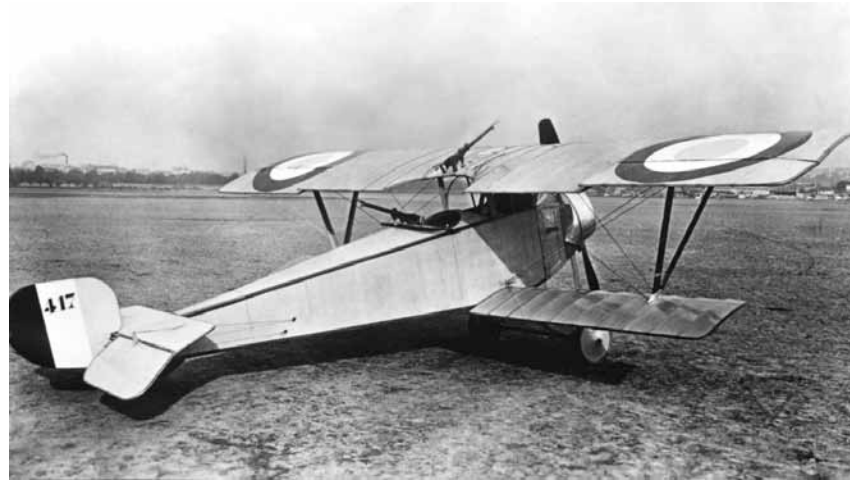
My helper friend number two is Alban Marcoux. He is a young man in his mid 80s who just loves aircraft and is always offering helping hand. A retired fireman he is an every day airport hangaround. He is not a pilot but he certainly can build great grass roots R/C planes. Alban came to become our helper all thru the project. His specialty was finding the tools that Gilles and I misplaced. You see Gilles and I are two absent minded workaholics so our weakness is that we do not remember where we put our tools...a bit like a squirrel who doesn't remember where he buried the nuts.

I gave ranks to my two friends: Gilles is captain, Alban the sergeant

and I am the lieutenant. I know some of you will ask, why am I not the captain since I am the owner and pilot? Turns out in WW1 days the observer was an officer, and the pilot was either a non commissioned officer or low ranking officer and was considered an aeroplane driver. So since Gilles is my master builder he earned the higher rank.

I also had other good friends who on occasions stopped by to see our progress. One of them is Sylvain, an engineer who teaches mechanical engineering at a local college. He was very helpful at making several parts such as my special tail wheel, wheel brakes and other special parts, as he had access to the school machinery. He also took part in several of our brainstorming sessions and plans readings. By the way the plans are not particularly user friendly. You really have to read over notes and do a lot of sleuthing. I spent many late hours on the net to gather lots of pictures and comments of past Nieuport 12 builders...thank god for builders who took the time to document their work and share it.

Another occasional friend stopping by was Marc a professional automotive painter and project manager for an armoured truck manufacturer here in St-Jean. He rebuilt two homebuilts, an Aeronca Champ and a PA 20, both rag



The Nieuport 12 was a French sesquiplane reconnaissance, fighter aircraft and trainer used by France, Russia, Great Britain and the United States during World War I. Later production examples were built as trainers and served widely until the late 1920s.

airplanes. His advice on covering was very helpful.

Project objective

Gilles and I established a goal when we started in the fall of 2012...the target was to get the N12 completed and flying in time for the 100th anniversary of its appearance in the N62 squadron in May 1916 at Cachy France during WW1

All French squadrons had the first letter of the aircraft manufacturers in their inventories like N in N62 means it is composed of Nieuports or S in SPA124 Lafayette escadrille means its composed of Spads. As for the numbers, when war started, squadrons started with #1 then 2 then 3 etc, and as that war dragged on and the role of aircraft became a necessity the number of squadrons increased.

Challenges

When I bought the project, the former builder had the wings, fuselage, round fiberglass cowling, empennage struts

and landing gear already roughly assembled but uncovered. There was no firewall, no engine, no engine mount and no gas tank. Our mission was to create this replica to be vintage as close as possible to the original. That meant creating a wood rudder bar, wood seats, wood instrument panel, wood broom sticks, a customized gas tank, a small tailwheel attached to a wood tail skid, vintage style instruments, in summary creating a cockpit that resembled the original.

The nose section

The originals had snub cowlings caused by their short and heavy rotary engines anchored directly on the firewall but I did not have a rotary or a radial engine. The plans called for a 65hp Rotax 582 engine. To me that was ugly as it required a long cowling that betrayed the vintage snub cowling look, and the sound of a 2 stroke would not be vintage. The plan did suggest the use of a continental or VW engine with the mags behind the firewall through a

hole covered with a metal cup. But few details of the engine mount were given, as that idea was never pursued by the designer or other builders.

The engine

I used a Continental 65hp engine boosted to 85hp that I had been saving for the Nieuport for over a decade. After kicking around ideas, studying the plans, and making calculations, I asked Gilles why not have the engine mount behind the firewall instead of forward. After consulting my engineer friends as to the effects of CG, stability, and strength, we designed a unique engine mount using large aluminum angles welded and bolted together.

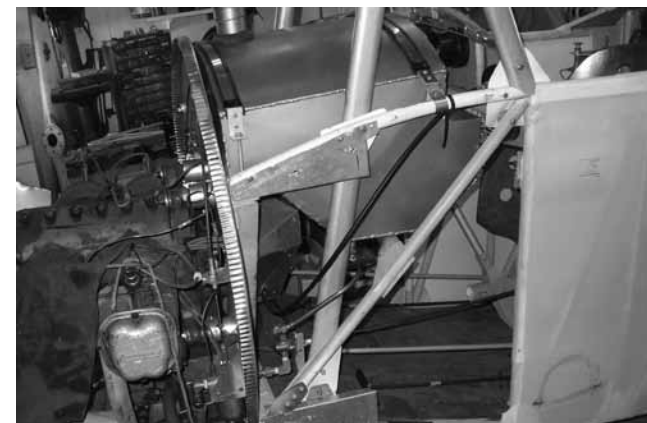
Oil tank

Only one issue was major, and this was to relocate or rebuild the oil tank so that it would clear the bottom of the firewall bracing. To this end we designed a special square oil tank made of steel which gave a 6 liter capacity.

The tailwheel

Vintage style called for a wood skid, as they did not use tailwheels in those days; the planes took off and landed in large grass airfields, without runways or ATC, so no taxiing was needed. Before takeoffs the ground crews rolled the planes out of the hangars and placed them wherever the wind direction called for. Additionally the skid drag reduced the ground roll, necessary because the ground crew had to run to halt the aircraft after touch downs. They would then just grab the wing tips to slow its momentum and turn it 180, then guide it back to the parking area.

So going through various special



tailwheel designs on the net I designed my own steerable item, fitting with a little 3 inch wheel and had it built by Sylvain out of chrome moly 1/8 inch thick. It swivels 180 degrees. For the wheel, I tried different roller blade wheels with drastic results. They all melted with the heat generated by the taxiing as the bearings did not last. Then Sylvain made a wheel out of hard plastic with heavy duty bearings. It did work but it got scuffed by the asphalt and was very noisy. Then I saw some 2.5 inch steel and hard rubber wheels at Wicks. That solved the issues.

The gas tank

The fuel tank is located behind the firewall above the legs as it was on the original. Originally the tank was copper but we used aluminum and painted it to look like copper, and it appears realistic. To make it Gilles worked up a design to maximize capacity using his computer with Corel Draw. We then made a dummy tank of wood for a test installation. It had to clear the instruments, the feet and the magneto cover. We then positioned the filler neck and the fuel line going to the gascolator. All piping is actually copper. Once the design was set I took the dummy tank to a retired welder who makes specialty parts out of aluminum. 300 dollars later I had a nice professionally welded gas tank. He also welded my special oil tank. The capacity of the gas tank is 72 liters and by the way the gas is gravity fed.

The seats.

We managed to make 2 Seats out of plywood with 1.5 inch holes in the back rest as on the originals. These are unyielding, but with small cushions they become quite comfy.

Fiberglass engine cowling

The cowl came in two half sections and had to be trimmed to fit. The original had a horseshoe shaped cowling. We temporarily taped the two halves together, fitted it over the engine to ensure its exact position, screwed it into place, then marked it for cutting. We reinforced the inside of the cowling to withstand the wind pressure caused by the prop so that its walls do not flex in the air.

Top: the engine mount looking forward past the rudder bar; the oil tank, and the tailwheel, a concession to modern airfield conditions. Original Nieuports had a tailskid that helped with braking. Bottom, the gas tank sits just aft of the firewall

Engine baffles

For engine cooling I used the J3 cub 65hp eyebrow baffles pattern. This is located inside the horseshoe cowling, and with everything in a black colour the baffles essentially disappear.

Landing gear

The wheels are Suzuki 400 motorcycle 18 inch spoke wheels with drum brakes. The suspension is 1/2 inch shock cord wrapped at both ends of the axle near the brake drums. I used the motorcycle's hand brake handles fixed to the floor near the rudder bar in a heel brake configuration similar to old Champ heel brakes.

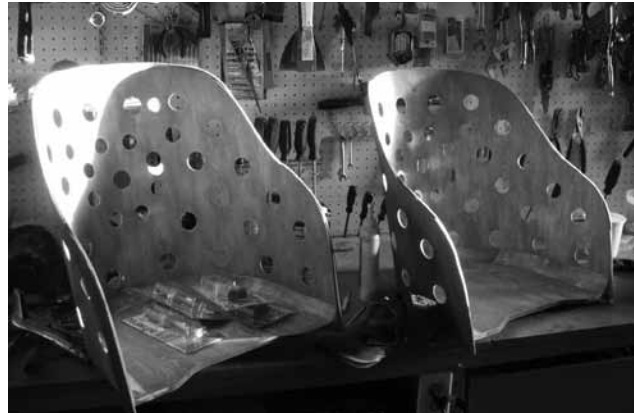
Instruments

I have only basic instruments that have a vintage appearance, a compass from an old Seabee, the altimeter and airspeed with worn out yellow needles and numbers, tachometer, and a clear tube inside a brass shell as gas sight gauge, electric oil and temp gages, Becker radio and Terra transponder. The engine is a Cont 65hp boosted to 85hp so there is no starter and no generator, thus no electrics. I installed a small 17 amp battery that I recharge occasionally. Its function is to provide power to my instruments and radio and they consume very little. Note that we also installed an ETEVE air speed indicator on the left forward strut for vintage purposes...but it really works.

Colors & emblems

Many long night hours were spent researching for the details of the Nieuport 12, such as colour schemes, squadrons, nationalities, uniforms etc...I even wrote to French museums for information. All this searching made me feel that I had become part of the WW1 aviators' breed. I read their stories, saw pictures of their grave sites, and photos of their individual families, their descendants...in short I spent many evening hours back in the war year of 1916 France.

We chose the silver finish as it was the standard colour of the manufacturer "Société Nieuport" when delivered to the different squadrons. As for the squadron number, I got hooked on the escadrille N62 with the "rooster" as emblem. The reason for this emblem was that the rooster is the French national emblem like the USA has the eagle and Great Britain has the bear. The story goes that the rooster was the first choice for the legendary N3 Guynemer's stork escadrille but the commander at the foundation of that squadron said the rooster does not fly well so the stork was selected. But for



Top down: the seats are fashioned out of plywood; the eyebrow baffles around the Nieuport's Continental can be seen here. Originally rated at 65 hp, the engine was boosted to 85 hp. the front instrument panel. Solo is from the rear seat.



Above: the Nieuport's build area.

many pilots, they wanted to avenge the German invasion of their beloved country, so when they heard of the formation of escadrille N62 and its adoption of the rooster, they asked to transfer to it

Building area

The building space was my hangar's separate shop 30'x16'x8'high. The hangar is not heated but shop portion is, with an old reliable Lennox oil furnace that used to heat my home located 35km away. I have 5 double neon fixtures that provided excellent lighting and a 2'x6' solid bench, old press drill, vise, grinder and lots of handy tools and a fair supply of hardware. All this is topped with a fridge, microwave, and a few basic dishes so we spent about 4 years of spare time in good comfort. There is no washroom but we mark our territories outside. I do have a large plastic sink with a 4 gallons water con-

tainer over it so we can make coffee and wash our hands. We sometimes compared ourselves to the Wright Brothers, spending hours brainstorming ideas and gadgets.

When the time came to assemble and inspect before covering we used the other, larger portion of the hangar because it has an asphalt floor.

Inspections

Although this project could qualify for Basic Ultralight I chose the amateur built category since I intended to fly with a passenger and this required inspections and a cost of about 1500\$ inspection fees thru MD-RA (Minister's Delegate- Recreational Aviation). A well experienced person named Pierre Fournier was assigned to my project. Pierre is a very nice man with a passion for amateur builds, and he meticulously did the Pre-covering inspections. At final I had only three minor snags.

Registration letters (Certificate of Registration)

Since this a/c falls into a vintage military replica Pierre suggested I apply for special marks. Indeed Transport Canada has a special clause for vintage and military replicas exempting them from putting the large registration markings under the wing or the fuselage. After paperwork and patience I got approval to put the markings under the horizontal stab with 3 inch letters. This demanded a bit of patience and paperwork but it paid off in the long run. The letters can hardly be noticed.

Special CofA (Certificate of Airworthiness)

Then came the final inspection. This meant the a/c had to be first flight ready. All inspection panels were open, and the rigging of controls had been verified, flying and landing wires were tensioned, turnbuckles were safety wired, and I was ready to answer questions...in short the builder must have to have knowledge of his aircraft inside and out. There must also be gas in the tank as the inspection also calls for an engine run. Again Pierre went through this craft with even more attention to details...Sherlock Holmes style. The result was a few more snags such as installing a carburetor filter, a minor fuel line modification, control stops, placards and control travels.

Weight & balance

The gross weight of my plane is 1070lbs so I had to be careful with weight. I have a small storage space similar to a large glove compartment with a small door located behind the back seat under the turtle deck, where I keep a scarf and gloves and an extra pair of goggles. Since the engine uses an "arm-

strong starter”and has no alternator or generator, I bought a small 17 amp battery weighing about 12 pounds. It is enough to power the radio, intercom, and transponder for several hours before a recharge. To stay within the W&B limits I anchored the battery on the forward firewall above the engine.

Flight preparations

As precaution for a new aircraft, one will perform many high speed taxis to get acquainted with the plane. I compared this to cowboy taming his new horse. My helpers and I felt like we were reliving the Wright Brothers days of pioneering. One difference is that we used a bit of modern tech. Gilles and I each bought a Mobius dash camera. We hooked these to struts to film different strategic areas such as the main landing gear bungees, brakes and the tail wheel area for which no statistics existed.

Taxi trials

My first taxi was a bit scary. I was using our asphalted taxiways. I have about 1500 hours on tailwheel aircraft, mainly with my Aeronca Champ, but this craft had a sensitive rudder bar with a very small homemade tailwheel and skimpy brakes. After several modifications and trials I was getting better brake management. Then came trials at higher speeds without raising the tail. On the first trial the tailwheel melted. The camera revealed that it had jammed and scrubbed the asphalt. Mind you we had used only a roller blade wheel. Next we progressed to a solid plastic wheel made by my friend engineer Sylvain who had made the swivelling tailwheel assembly. This was much improved but

a bit noisy. I have to say I was always struggling to fight its tendency to sway on the asphalt, to the point of experiencing a few small ground loops. But this issue was only on the hard surface taxiways.

Then I decided to perform high speed taxis on the grass side of the taxiways. Then there was no swaying tendency on the grass. The camera shows that the small tailwheel was scorching the grass therefore maintaining it straight. So I figured it was time to raise the tail. Overcoming my fears I pushed the throttle full and got to raise the tail, slacked the throttle and just rolled on the main wheels until the tailwheel returned to the ground. There was perfect control, with practically no oscillation. However after a few runs in bumpy grass a suspension bungee slacked on the left side. There was no damage to the plane but it looked like a limping bird. We returned to the hangar where we improved the bungee anchoring.

First flight

After many hours spread over many weeks with high speed taxiing, tail ups and checking engine reliability, the time came where I talked myself into performing the first flight. November 17 2016 was a chilly Autumn day but the breeze was just right. I chose a grass strip that is used by the air cadets for gliders. Orientation is 11/29 and the wind was straight in at about 8 knots. My friends were positioned with cameras and I told them that I might decide to abort if my guts told me to just make other runs. I positioned myself on runway 29 and performed another

high speed taxi run, then made a 180 and taxied back to the start. I called the tower and said I may take it up and if so it would be for one left hand circuit. I was told the airport was mine...no traffic reported. After checking my safety belts, realigning my scarf and helmet...I said it was now or never. Throttle full, the tail raised fast and within a few hundred feet the wheels left the ground and up I went.

Several months before the flight I contacted a person who built a Nieuport 12 over a decade ago. His name is Rick Giles in Chicago. He had the same plane from the same designer but used a converted Yamaha Virago 1100cc motorcycle engine in the nose. He kindly gave me some good finishing tips but he stressed that before the first flight I should call him again and be ready to take notes. I did so a few months before the flight and he explained a few things such as:

1- This plane has a flying rudder with no vertical stabilizer. There is about 7 inches of rudder that is forward of its pivot post. Therefore when applying the rudder bar for a turn, the rudder will tend to stay in that direction. You have to bring it back or else it will surprise you and wind up in a spin.

2- He stressed the need to keep my eyes on the ball to make sure I’m not slipping. He said he saw one of his friends’ first flight and after a left bank after climbing he continued to bank and started to spin, hitting the ground and destroying the plane. He luckily walked out with only a few scratches. He also said he too got scared at the beginning as he was feeling the plane was slipping sideways and corrected

But the most important event will be to fly over the November 11th Armistice ceremony held in Montreal. It will really be the 100th anniversary of the end of World War 1

in time. Rick had over 200 hours on his Nieuport before he sold it.

So back to my first climb out, it was all ok until I started a delicate left turn with ailerons and rudder at 600 feet. I began pumping adrenaline trying to straighten it after the turn for the left leg of climbing. The wind was on my right and I felt it pushing the banked wings thus not allowing me to bring them level. The plane was not reacting fast enough, and the plane remained banked. I thought of Rick’s advice and said “hell am I falling into the same trap too ?” ...I continued the battle with the rudder bar and stick, even putting my right arm full length outside the cockpit as an automatic effort to help straighten and as I turned downwind, the plane began to level out. Seeing myself out of danger I said now I must land fast and I began to relax a bit. This relaxation gave me time to analyse and plan my landing. I wanted to avoid turns away from the wind. So I made a few shallow turns towards the wind and that caused me to zigzag voluntarily. Then came the tower who kept calling me for my intentions because I was not respecting my normal circuit. Thanks to my earplug type earphones I could hear the tower well but the noise in the cockpit was so loud and drafty that he could not hear me. Then I said this is safety first, forget the tower and concentrate

on landing. Having finally reached the final leg, I started my descent and presto, I was touching the ground on a soft wheel landing and made a perfect stop.

Once back at the hangar, I was greeted with cheers but I was not at all in the mood for it. As I removed my helmet, my older helper said with a large smile “wow she flies great heh?” I looked him in the eyes and said “not exactly...we’ll have some examining to do on the controls.”

Again with the two cute little HD Mobius cameras, we could see part of the problem. The aileron travel was only about an inch with my full stick sideways. We found the aileron control cables were not tight enough. Furthermore we found the rudder travel was limited by its stoppers. So with aileron and rudder adjustments I was able to make another flight before the winter set in...and that time it went very well.

The mishap I experienced was after all part of being the test pilot of your own plane. One will expect to have flying issues on the first flight.. that is what testing is all about !

Mission accomplished

With the first flight being November 15, 2016 we could say we met our centennial goal of the appearance of the Nieuport 12 in the N62 “les coqs” squadron, mission established four years ago.

This summer we should be attending various air meets and events: The Faucheur de Marguerite in Sherbrooke Quebec, St-Jean balloon festival in August, plus several others as they announce. But most important event will be to fly over the November 11 th Armistice ceremony held in Montreal. It will really be the 100th anniversary of the end of WW1.

Now I have logged 31 hours and have participated in two air show events in 2017. I was given an award by the RAA chapter 415 and had a few local newspaper interviews. My 25 hour 25 miles test period has been completed and I have received my full special COA and can take passengers. Guess who was first to climb aboard....???

Nieuport 12 C-FNUJ specs:

Speed 85mph, cruise 75mph
Rate of climb..... 500ft per minute
Take off roll 150 feet
Land roll..... 400 feet
Fuel consumption..... 20liters/hour
Duration..... 3.5 hours
Stall.....35 to 40mph
Approach speed..... 70mph
60 over the fence, throttle back at approx 30 feet from ground. Note that these old planes had a lot of drag caused by the multiple flying wires, landing gear, double wings, and a cowling with a large opening; all these will slow the plane quickly once throttle is pulled back. This is definitely not a glider. The pilot must maintain power or put the nose down to keep speed up until close to touchdown. The pilot flies from the rear seat, a very drafty area. The passenger sits up front and his cockpit has little turbulence..

Because of its slow control response



this is not an aerobatic biplane, but it handles very well in crosswinds. I have experienced a 90 degree 20 knot gusting crosswind on landing with no issues. We did install a trim for the elevators before covering but removed it last year as I did not need to use it.

Since first flight, I have changed the radio from a hand-held to a fixed Becker radio and added a Terra transponder and both of these instruments consume very little voltage from the battery.

So this concludes my first project. My friends and I have started to work on another homebuilt, it will be called the Super Chief. ✈

SPECIAL THANKS TO

Gilles Paradis (captain Paradis)

Alban Marcoux (sergent Marcoux)

Sylvain Simard, engineering teacher for his devoting suggestions, building and designing special parts.

Marc Beauchamps, who gave us valuable lessons in rib stitching as well as coaching our first wing covering.

Bob Langlois, who gave me a contact to build the oil tank and who took pictures regularly.

Alain Levreault, an artist in the welding field who performed the welding of the brake assembly.

Martin Radio for making and applying the fuselage roosters as well as rudder letterings.

Rick Giles for his friendly Nieuport flying tips

And last but not least, my wonderful wife for her support and patience for my frequent late arrival for meals.

You can see the first flights at: Nieuport12 richard legault YouTube: <https://www.youtube.com/channel/UCfZkgOpXT3sJnYehrm1DSNg>

The Nieuport 12 will be at the August 13 2018 fly-in during the Festival des Mongolfiers at the St-Jean sur Richelieu Airport. Entry is free for those who fly in and we offer hot dogs, corn on the cob, soft drinks, and a free pass to the festival site attractions, compliments of APPHYJN and its volunteers. There are activities for children so bring the kids.

Top: three proud friends: LTR Gilles Paradis, Alban Marcoux, and Richard Legault
Centre, Gilles before first ride and (bottom) after.

What Makes an RAA Chapter Great?

There are dozens of chapters of RAA across Canada and each one is unique, but one common thread binds us to the national organization... our love of recreational aviation. Whether we own, build or just enjoy flying amateur-built aircraft, RAA Canada provides us with an opportunity to share our passion, our ideas, and our friendship with like-minded individuals across this great country. We know that by being part of RAA Canada we garner benefits such as insurance coverage for our fly-ins and representation at Transport Canada and NavCanada meetings, but it is what we do at the local level that makes RAA the excellent organization it has been in the past, is now, and will be in the future.

Without people willing to contribute to the success of RAA, there would be no RAA fly-ins, no first-hand accounts or interesting technical articles for the Recreational Flyer magazine, no representation for amateur-built aircraft, fewer opportunities to meet with other builders and pilots, fewer opportunities to share ideas and knowledge, and a smaller circle of friends for all of us. I suspect that when asked what each of us thinks about our own chapter we would reply with something like, we are a great bunch of people who share a common interest and work together to promote flying and amateur building of aircraft. As RAA members, we all strive for the same thing, but every chapter is different. Some chapters thrive and others struggle to survive. It certainly begs the question... what makes an RAA chapter great?

The size of a chapter certainly can make a difference in its success in that larger chapters provide for a larger pool to draw resources from and smaller chapters struggle to get volunteers to assist at functions and contribute at chapter meetings. It certainly makes sense that we would want as many members as we can get, but we all face similar challenges in trying to maintain membership levels as the average age of our members continues to increase faster than we can get new members to join. Most service clubs and other volunteer organizations face similar challenges as life gets busier and free time is at a premium. In the face of

this truth, we all must work a little harder to make our local chapter the best it can be. Size matters, but chapter success boils down to two major factors; individual contributions and the time we volunteer to help RAA.

Six easy ways to contribute:

Share an idea – Everyone has unique perspectives and experiences that others could learn from. Sharing a story, a resource, technical knowledge, or ideas at monthly meetings are all valuable ways to make a difference. Even suggestions of a possible guest speaker can be a helpful contribution to the chapter.

Share a Tool – Everyone who has built or is building an aircraft knows there are specialty tools and jigs that speed up or simplify some part of the building process. Gather a “Tool Crib” of items that any member can borrow to assist in the building or maintenance of their aircraft. Sharing builder resources can help to elevate your chapter from a social club to a functional chapter. Whether the tools and jigs are purchased by the chapter or donated by members, having them available says a lot about the motivation and direction of the chapter by providing a tangible benefit beyond the social aspect.

Write an article – Write an article for your local chapter newsletter and/or the Recreational Flyer magazine. Share your ideas with the rest of the RAA community outside your own chapter. Don’t be afraid of not having the writing skills since the magazine editor will be happy to review the article and provide feedback to make it great. Supplying a photo or two and a few point form notes is a great start for a technical article and a great help to the editor. The Recreational Flyer magazine is the flagship publication of RAA, but even a short article for a local chapter newsletter can make a difference.

Provide feedback to the chapter executive – Your chapter executive have gone out of their way to try to make the chapter better and look forward to any and all feedback they can get from the other members to improve the chapter. Are meetings too formal; too informal; do they run too long; do you have an idea

how to get more young people interested in joining RAA? Take your ideas to your chapter executive!

Bring a friend to a meeting – Most of us know someone who has expressed an interest in the fact that we built our own planes or that we fly them to RAA fly-ins. There are a lot of potential members out there that just need to be invited.

Introduce yourself - Introduce yourself to someone at the local airport that is not an RAA member yet and invite them to a meeting or fly-in. Introduce yourself to guests and visitors at local chapter meetings and events. Guests who feel welcome are more likely to become members. Executive members in the KW chapter carry business cards that they pass out to potential members. On the back of the card is an open invitation to come to a monthly meeting as a guest of that member.

Six easy ways to volunteer your time:

Join a committee – Most committees require only a small time commitment, but offer an excellent opportunity to make a difference. Share your ideas in the co-operative environment of a small but focused group. Committees are valuable resources to the chapter executive providing input and direction that make the chapter better for all members.

Do a presentation or co-presentation – Put together a lecture, display or PowerPoint show that covers a topic of interest to other builders and pilots. Whether it is based on personal experience or just a topic of interest that you have been researching, other members are most likely interested in hearing what you have to say or show them. Consider co-presenting with an outsider that has expertise in an area of interest to members.

Assist at an RAA function – Help with organizing the meal at a fly-in or volunteer to do the barbequing; volunteer to pick up the food or drinks; volunteer to be the Master of Ceremonies or help clean up after the annual Christmas Party. It is possible whoever is doing it now would like a break, especially if they have been doing it for a long time.

Represent your RAA chapter at other aviation events – Acting as a liaison or goodwill ambassador at other aviation events can be a great way to give your chapter

exposure at those events. This can be a formal position arranged by the chapter or an informal one where any member attending outside events makes a point of promoting the chapter by inviting people to attend a meeting as their personal guest.

Help another member – Sometimes the most difficult thing we can do is to ask for help, but often the easiest thing we can do is to offer it. Step outside your regular circle of friends to offer assistance to another builder in the chapter who may be experiencing a challenge with a specific part of their project. We all tend to develop specific areas of expertise whether through interest or repetition and others can occasionally benefit from our assistance. We all guard our time, but a little of yours may save a whole lot of someone else's and help build your chapter as a result.

Join your chapter executive – There are few ways that can make more of a difference in your local chapter than joining the executive or becoming a director. Your contribution to the chapter will be appreciated by all of the members and you will have an opportunity to help steer the chapter activities. Experience is not as important as motivation and some basic leadership skills. New blood in the executive can even rejuvenate the entire chapter.

Make your chapter great - Pick One!

It's as easy as picking one of these ideas and doing something about it! If you can do more, that's terrific, but take action on at least one of the ideas presented above.

There is a saying that it takes a village to raise a child and I would suggest that the same is true of a successful RAA chapter. Without at least some participation by the entire membership, the chapter will never reach its fullest potential. Step up; use one of these ideas or find your own way to help your local RAA chapter! RAA Canada and your local chapter are what you make them. Please give back to RAA by contributing or volunteering.

I'm reminded of an excellent quote attributed to Alice Hocker - *...Greatness is not what you have, but what you give.*

Dan Oldridge, President KW-RAA

Upcoming Events

BRAMPTON GRAND FINALE FALL FEAST

Mon. Sept. 3 Brampton CNC3—18:00 pm Grand Finale, Fall Feast. The last Monday night BBQ of the season. One of the largest turn-outs. Last year had roast beef and pork, roast and mashed potatoes, fresh corn on the cob. Nominal cost. RAA-TR Hangar, north end of Brampton airport CNC3. Pres. Pres. Fred Grootarz, 905 212-9333, fred@acronav.com ; V.P. Alain Ouellet, 416-709-2020, aouellet@icecanada.com

RAA OSHAWA BARNYARD FLY-IN

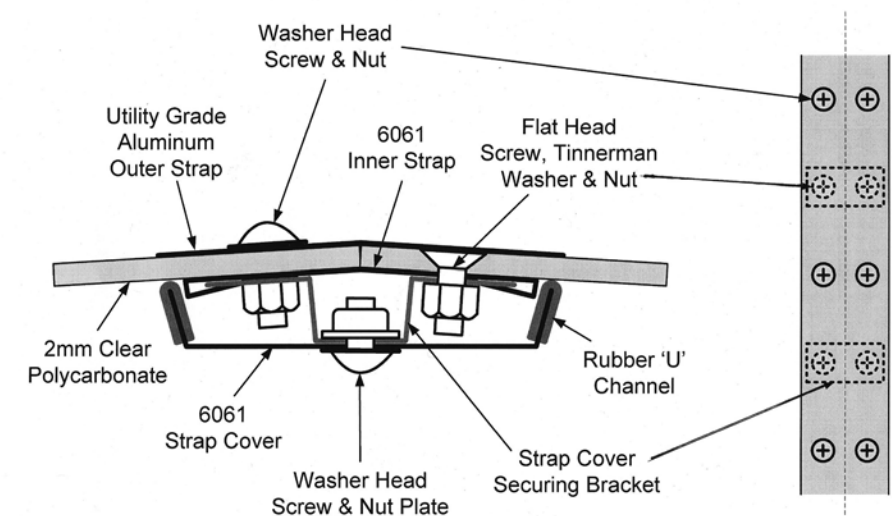
Sunday, September 9, 2018. Orono Hawkefield (ON) 0800 – 1700. Come on out to the RAA Oshawa District Recreational Aircraft Association

organized Fly-in at Hawkefield, CHF4, N 44 00, W 78 39, 620 asl (private strip) 3000 ft grass. Ultralights, amateur-built, Warbirds and certified aircraft from all parts of southern Ontario. Overnight camping on field is available, if required (no facilities). Info in CFS under Orono Hawkefield, radio 123.2 For more info contact James Morrison jamesmorrison190@gmail.com

BRAMPTON CHRISTMAS DINNER & SILENT AUCTION

Sat. Dec. 8, Cocktails @ 6pm, Dinner @ 7pm The Do-Not-Miss event of the year in the Wings Restaurant. Completion, and First Flight awards are presented, among other recognition awards, followed by a keynote speaker. Donations to the Silent Auction gratefully received. All proceeds to RAA-TR. Pres. Fred Grootarz, 905 212-9333, fred@acronav.com ; V.P. Alain Ouellet, 416-709-2020, aouellet@icecanada.com

Alternate Sonex Canopy Diagram



In the previous issue there was an article by Graham Luckhurst on his canopy replacement for the Sonex. His drawing of the actual joining method of the sheets of plastic was missed: here it is for members who wish a detailed drawing for making their own canopy.



RAA Chapters and Meetings Across Canada

The following is a list of active RAA Chapters. New members and other interested people are encouraged to contact chapter presidents to confirm meetings as places and times may vary.

ATLANTIC REGION

HAVELOCK NB: Weekly Sunday morning get together year round, all aviation enthusiasts welcome. Havelock Flying Club - 25 mi west of Moncton. Contact Sterling Goddard 506-856-2211 sterling_goddard@hotmail.com

QUEBEC REGION

COTE NORD (BAIE COMEAU): Meeting times to be advised. Contact Pres. Gabriel Chouinard, 418-296-6180.
LES AILES FERMONTOISES (FERMONT): First Sunday 7:30 pm at 24 Ibergville, Fermont. Contact Pres. Serge Mihelic, 418-287-3340.
MONTREAL (LONGUEUIL): Chapter 415, Meeting in French second Wednesday at 8 pm, at CEGEP Edouard Montpetit 5555 Place de la Savane, St. Hubert, PQ. Contact president Normand Rioux at NRIOUX@lapresse.ca or J-F Alexandre info@raa415.ca
OUATOUAIS/GATINEAU: Every Saturday 9:00 am to noon at the restaurant l9Aileron in the airport terminal. Contact Ms N.C. Kroft, Gatineau Airport, 819-669-0164.
ASSOC DES CONSTRUCTUEURS D’AVIONS EXPERIMENTAUX DE QUEBEC (QUEBEC): Third Monday 7:30 pm at Les Ailes Quebecoises, Quebec City Airport.
ASSOC AEROSPORTIVE DE RIMOUSKI: First Saturday at 9:00 am, La Cage aux Sports, Rimouski. Contact Pres. Bruno Albert, 418-735-5324.
ASSOC DES PILOTES ET CON-

STRUCTEURS DU SAGUENAY-LAC ST JEAN: Third Wednesday 7:00 pm at Exact Air, St Honore Airport, CYRC. Contact Marc Tremblay, 418-548-3660
SHERBROOKE LES FAUCHEURS de MARGUERITES. Contact Real Paquette 819-878-3998 lesfaucheurs@hotmail.com

ONTARIO

BARRIE/ORILLIA CHAPTER 4th Monday of the month at 6:00 PM at the Lake Simcoe Regional Airport for the months of June, July & August (BBQ nights) For other months contact Dave Evans at david.evans2@sympatico.ca or 705 728 8742
COBDEN: Third Thursday of the month at the Cobden airfield clubhouse 20:00 hrs. Contact Bob McDonald 613-432-8496 or bobkim.mcdonald@gmail.com
COLLINGWOOD AND DISTRICT: The Collingwood and District RAA, Chapter 4904, meets every first Thursday of every month, at 7:30 PM except July and August, at the Collingwood Airport or at off-site locations as projects dictate. The January meeting is a club banquet held at a local establishment. For more information contact Pres. Skip Reeves 705-429-5154
FLAMBOROUGH: Second Thursday 8:00 pm at Flamborough Airport. Contact Pres. Karl Wettlaufer 905 876-2551 or lazykfarm@sympatico.ca
KENT FLYING MACHINES: First Tuesday 7:00 pm at various locations. Contact President Paul Perry 519-351-6251 pkperry@teksavvy.com
KITCHENER-WATERLOO. Meetings are on the second Monday of each month at 7:30pm upstairs at the Air Cadet building at CYKF except during the summer months when we have fly-ins instead. Please contact Dan Oldridge at kwraa@

execulink.com for more information or visit our newly expanded website at http://www.kwraa.net/.
LONDON/ST. THOMAS: First Tuesday 7:30 p.m. At the Air Force Association building at the London Airport. Contact President Bill Weir 519-461-0593 wmiweir@gmail.com
MIDLAND/HURONIA Meetings: first Tuesday of each month, 7:30 pm, at the Huronia Airport terminal building (CYEE). Contacts: President Rob MacDonald - 705-549-1964, Secretary Ray McNally - 705-717-2399, e-mail - raamidland@gmail.com E-mail – raa.midland@gmail.com .
NIAGARA REGION: Regular meetings occur the second Monday of every month at 7:30pm in the CARES building at St. Catharines Airport (CYSN). During the summer months though, June-September, meetings take place the second Monday of those months at 5:30pm in Hangar #4 at Welland Airport (CNQ3). Contact Elizabeth Murphy at murphage@cogeco.ca, www.raaniagara.ca
OSHAWA DISTRICT: Last Monday at 7:30 p.m. at Oshawa Executive Airport air terminal, ground floor, 1200 Airport Boulevard. Contact President: Jim Morrison, 289-675-0660, jamesmorrison190@msn.com Website raaoshawa.blogspot.ca
OTTAWA/RIDEAU: Kars, Ont. 1st Tuesday. Contact: Secretary, Bill Reed 613-858-7333 bill@ncf.ca
SAUGEEN: Third Saturday for breakfast at Hanover Airport. President: Barry Tschirhart P.O. Box 1238 27 Ridout Street Walkerton, Ontario. Home: 519-881-0305 Cell: 519-881-6020. Meetings are held every second Tuesday evening, at 7:30pm. Location(s) Saugeen Municipal Airport, Kincardine or Port Elgin. All interested pilots are welcome. Email: barry.tschirhart@bell.net
YQG AMATEUR AVIATION GROUP

(WINDSOR): Forth Monday, 7:30 pm Windsor Flying Club, Airport Road, Contact: Kris Browne e_kris_browne@hotmail.com
SCARBOROUGH/MARKHAM: Third Thursday 7:30 pm Buttonville Airport, Buttonville Flying Clubhouse. Contact Bob Stobie 416-497-2808 bstobie@pathcom.com
TORONTO: First Monday 7:30 pm at Hangar 41 on north end of Brampton Airport. Contact: President Fred Grootarz - Tel: (905) 212-9333, Cell: (647) 290-9170; e-mail: fred@acronav.com
TORONTO ROTORCRAFT CLUB: Meets 3rd. Friday except July, August, December and holiday weekends at 7:30 pm Etobicoke Civic Centre, 399 The West Mall (at Burnhamthorpe), Toronto. Contact Jerry Forest, Pres. 416 244-4122 or gyro_jerry@hotmail.com.
WIARTON: Bruce Peninsula Chapter #51 breakfast meetings start at 8:30am on the second Saturday of each month in the Gallery of Early CanadianFlight/Roof Top Cafe at Wiarton-Keppel Airport. As there are sometime changes, contact Brian Reis at 519-534-4090 or earlycanflight@sympico.ca

MANITOBA
BRANDON: Brandon Chapter RAA meets on the second Monday of each month at the Commonwealth Air Training Plan Museum at 7:30 PM except in the months of July and August. Contact Pres. John Robinson 204-728-1240.
WINNIPEG: Winnipeg Area Chapter: Third Thursday, 7:30 pm RAA Hangar, Lyncrest Airport or other location as arranged. Contact President Ben Toenders at 204-895-8779 or email raa@mts.net. No meetings June, July & Aug. RAA Winnipeg info also available at Springfield Flying Center website at http://www.lyncrest.org/sfcrac.html.

SASKATCHEWAN
Chapter 4901 North Saskatchewan. Meetings: Second Tuesday of the month 7:30pm

Prairie Partners Aero Club Martensville, Sk. info at www.raa4901.com. Brian Caithecart is the chapter president. Contact email: president@raa4901.com.

ALBERTA
CALGARY chapter meets every 4th Monday each month with exception of holiday Mondays and July & August. Meetings from 19:00-21:00 are held at the Southern Alberta Institute of Technologies (SAIT) Training Hangar at the Calgary Airport. Join us for builder discussions, site visits, tech. tips, fly out weekends and more. Contact President Dennis Fox dennis77fox@gmail.com 403-443-8434 or Secretary Bruce Flach o2fly@yahoo.ca
EDMONTON HOMEBUILT AIRCRAFT ASSOCIATION: meets second Monday - Sept. to June. Contact Pres. Roger Smeland - 780-466-9196 or Jim Gallinger 780-242 5424. Website www.ehaa.ca
GRANDE PRAIRIE: Third Tuesday, (September to April), 7:30, 2nd floor boardroom of the Grande Prairie Terminal Building. Summer events on an informal schedule. For more information contact Lee Merlo at 780-518-4254 or e-mail arniesusanmeyer@gmail.com

BRITISH COLUMBIA
DUNCAN: Second Tuesday 7 pm members homes (rotating basis). Contact Pres. Howard Rolston, 250-246-3756.
OKANAGAN VALLEY: First Thursday of every month except July and August (no meetings) at the Mekong Restaurant.1030 Harvey Ave. Dinner at 6:00pm, meeting at 7:30pm Contact President, Cameron Bottrill 250-558-5551 moneypit@uniserve.net
QUESNEL: First Monday/Month 7:00 p.m. at Old Terminal Building, CYQZ Airport. Contact President Jerry Van Halderen 250-249-5151 email: jjvanhalderen@shaw.ca
SUNCOAST RAA CHAPTER 580: Second Sunday 13:30 pm Sechelt Airport Clubhouse, sometimes members homes. Contact Pres.

Gene Hogan, 604-886-7645
CHAPTER 85 RAA (DELTA): First Tuesday 7:30pm, Delta Heritage Airpark RAA Clubhouse. 4103-104th Street, Delta. Contact President Peter Whittaker pwhitt@telus.net Website www.raa85.ca.
VANCOUVER ISLAND AVIATION SOCIETY (VICTORIA): Third Monday 7:30 pm Victoria Flying Club Lounge. Contact Pres. Roger Damico, 250-744-7472.
THOMPSON VALLEY SPORT AIRCRAFT CLUB: Second Thursday of the month 7:30 pm Knutsford Club, contact President Darren Watt 250-573-3036
ALASKA HIGHWAY: meetings held every third Thursday of every month (except July & August) at the Taylor Fire Hall at 7:30 p.m. For more information call Gerry at 250-782-4707 or Heath at 250-785-4758.

Chapter executives, please advise of changes as they occur. For further information regarding chapter activities contact RAA Canada, Waterloo Airport, Breslau ON N0B 1M0 Telephone: 519-648-3030 Member’s Toll Free line: 1-800-387-1028

Emails can be sent to President Gary Wolf at: **garywolf@rogers.com** and George Gregory at **gregdesign@telus.net**.

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To submit or delete a classified ad, please send to raa@raa.ca and place "RAA ad" in the subject line.

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Recreational Aircraft Association Canada
President: Gary Wolf / Treasurer: Wayne Hadath

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The Recreational Flyer is devoted to the aerospace sciences. The intention of the magazine is to promote education and safety through its members to the general public. Material in the Flyer is contributed by aerospace engineers, designers, builders and restorers of aviation devices and vehides, used in an amateur capacity, as well as by other interested persons, publications and organizations. Contributions to the Recreational Flyer are voluntary and without remuneration. Opinions expressed in articles and letters do not necessarily reflect those of the Recreational Aircraft Association Canada. Accuracy of the material presented is solely the responsibility of the author or contributor. The Recreational Aircraft Association Canada does not guarantee or endorse any product offered through articles or advertising. The Flyer and its publisher welcomes constructive criticism and reports of inferior merchandise or services offered through advertising in the publication.

BELITE FUEL PROBE SYSTEM 1/8" A.S # 10-05866 never used \$180; Sky Tec Sole-noid A.S, # 07-03562 never used \$50. Aero-voltz battery charger \$80 Ask about 16 cell Aerovoltz lithium battery + shipping Mike 519-762-3910 or mtiyit@start.ca

NEW AILERON TRIM KIT – Van’s part number AIL-T6 \$45.00 CDN OBO Well-made wooden jig for RV 6/6A fuselage construction – open to offers Call Bob Stewart 204 853-7776 stewart@mynetset.ca



After completion of my RV7 (not for sale) I have a few brand new project left overs that I want to sell them:

1-One (1) Van’s Aircraft trim cable CT23V42-DF-2-181 / Tuthill Corp (brand new)-Original price US149.00 Asking US\$75.00

2-Three (3) control cables ACS-CT-A-740BL 0720 BLACK / 6 FEET (brand new)-Original price US36.50 eachAsking US\$18.00 each

3- Two (2) landing lights 100W/ 12V each with reflectors only, from Duck Works (brand new) Van’s complete kit sells for US\$115.00 each -Asking US\$50.00 for both.

4-One (1) Kuntzleman Electronics Round Tail Light with strobe and white positioning LED lights, 25 feet cable and connector (brand new still in the box). -Original price US\$240.00,Asking US\$80.00

Jose Lins jlinsjr@shaw.ca 778-998-2718

BASIC ULTRALIGHT PROJECT for sale, all metal low wing tail wheel, not registered. Asking \$8000.00 OBO, also have an EA-81 with belt redrive, willing to take trades, 701 or 750 Project or side by side 4 wheeler. Email billdonig@hotmail.com 705-842-0801.

CLEANING THE HANGAR - SELLING AS A PACKAGE.

1. Maranda project on gear, at precover stage with all woodwork completed to a high standard. This is a spacious STOL aircraft with folding wings.
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5. New panel instruments in their boxes, plus a supply of AN hardware

This is being sold as a package only, \$15K CDN. 519-806-8560, Brian

SKIS FOR SALE Aluminum/Teflon skis for home built. Used one season on a Challenger, also suitable for Chinook. Full harness. Very good condition. \$300 OBO. Call J.J. @ 778-684-0411. ALUMINUM WINGS Built at Edmonton factory for Griffin MKII. Wings are 136 sq. ft. for 1600 lbs. Finished with gas tanks installed. Can be used on high or low wing with modifications. \$500 OBO. Call J.J. @ 778-684-0411.

ROTAX 503, 2 Carburetors, mounts for Challenger or Chinook. Runs very well. Electric and/or pull rope starter. Mechanical prop reduction. \$500 OBO. Call J.J. @ 778-684-0411.

BOWERS FLY-BABY for sale , asking \$5,500 CDN. No Engine. Needs some Instruments. Test flight time has been flown off. TTAF 29.8 Hrs, built in 1970. The wings are off and it has been stored inside. B.C. Canada. bill.clifford@hotmail.com

AVIATION HEADSETS, 2 Pilot, 2 Flightcom, \$100 each OBO. Also old Bendix turn and bank (air driven) and altimeter, best offer. 416-822-0438 or 905-787-0017 or 416-456-8411 or 416-221-2392



ZENAIR 701- BASIC ULTRALIGHT- 570 lbs. Empty weight with 912 80 hp engine 600 hrs. Ttaf approx. 1000Hrs. 3 Blade warp drive prop, jeep gear - matco mains, quick remove – 2 piece doors, extended baggage with locking doors, storage under seat. Beanie roof - new windshield. Panel has eis engine analyzer, narco transponder, icom 720 radio, ultra-com intercom with helmets. Currently set up for amphib or straight floats \$28,000.00 Cdn with amphib floats, \$24,000.00 W.O. Floats. 519 822 6693, Mill-fly@sympatico.Ca

E.A.A. BIPLANE, Ron Riley's first home-built, airframe only, includes cowlings, motor mount, flying wires from Acro 1, N.O.S. canopy, fabric & other covering materials, wood etc. Dismantled," sold as is, where is" \$3500. G Trimble 519 461 1665 ijtrimble@gmail.com

ANDERSON KINGFISHER C-FBQF, a 2 seat amphib flying boat with a 2016 Aero-tech overhauled 160 Lycoming. All new instruments and accessories. Maiden flight was October 2017. Asking \$48,000. Contact Guy at gmlfebvre@outlook.com

1946 PIPER PA-12, rebuilt as Owner Maintenance in 2000. Lycoming 160 hp with 270 hours. New 2250 floats and rigging by Ed Peck Aero in 2016. Useful load 1000 lb. Long range tanks and all attributes and goodies required of a perfect bush plane. Overall condition is 9/10. \$100K gmlerfebvre@outlook.com

WANTED - LYCOMING 360 running engine or core for rebuilding, will consider carbureted or injected. bwelfred@rogers.com (Ontario)

1938 110 CLIP WING MONOCOUE project. Custom built, not from plans. No engine, no instruments. Wings, ailerons, full tail group and fuselage, all wood, not covered. \$5000, make an offer or trade. Email for pictures tisr@golden.net

AVIAT HUSKY PROJECT. Salvaged fuselage repaired, on gear, header tank, tail wheel, tail feathers, new wings built, have fuel tanks, no panel, controls installed. Was built according to the 51% rule. No engine. \$23000 or make an offer. Email for pictures. tisr@golden.net

ZENAIR FLOATS FOR ZENITH 701, 2 sets. Amphibs with all gear \$5500. Zenair straight floats \$4000. Tom 519-822-6693, millfly@sympatico.ca

Wanted - Lycoming 360 running engine or core for rebuilding, will consider carbureted or injected. bwelfred@rogers.com (Ontario)

FOR SALE - Flightcom Model 403 Panel mount Intercom, New in box never used. Paid \$240 ...sell for \$150 or best offer. bwkirk@mts.net

FOR SALE - Aviation Headsets, 2 Pilot,

2 Flightcom, \$150. each OBO, Also old Bendix turn and bank (air driven) and altimeter, best offer. 416-822-0438 or 905-787-0017 or 416-456-8411 or 416-221-2392

FORSALE - Zenair Ch 300 Registered plans and TR1-Z plans. Started but not complete because of age and illness. Includes: Left and Right spars, Centre spars, Nose ribs, rear ribs, ailerons, flap ribs, vertical tail nose and rear ribs, all completed. 300 clecros 1/8 and 5/32. 10 full sheets 4 x12 032 6061 T6 Aluminum, 2 1/2 of part sheets. 10 Aviation construction books and three how to do CDs. Asking \$2000.00 or best offer. Please contact Wayne at 519 799 5050.

FOR SALE - Four lengths of spar grade sitka spruce. 7/8" x 6 1/4" rough, x 20 ft. This will plane down to 3/4" x 6". Located in Kenora, Ontario. I will box and wrap and carry to a shipping depot. Buyer pays shipping, or my ship costs will be added to purchase price. Cost for this material, planed, at Aircraft Spruce Canada is \$14/ft, I am selling for \$600 CDN. Call 807-468-4764, or email pjohnson@kmts.ca.

FOR SALE - Complete Ivoprop Magnum in flight adjustable pitch prop for sale. 4 3/4" Bolt pitch Dia. 37 hrs. on a V6 260hp Engine. (Spitfire MK 26B). Asking \$2,000.00 CAD. Please contact Bob Poole at Aerostructural Inc 416-844-9440,

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RAA London/St. Thomas

At the June meeting, it was reported that Ed Hollestelle has flown off the 25 hours on his RV-6 and is now unrestricted, and that Gary Bishop has completed his engine, brakes and wheel installations and has only the windshield left to complete. Chris presented the second of his two-part series on "Rotax Today." The night's discussion focused on Installation, Servicing and Operation, along with tips on how to avoid "gotcha's" that are unique to the Rotax 900 series.

There was no formal July business meeting at this month's gathering. Roy, his daughter, Melinda, and grandchildren graciously hosted us for a casual get together and provided some very tasty and decorative cupcakes and fruit. Roy's field was in perfect condition, but the weather was somewhat challenging. Len Fallowfield and friend Paul arrived from Woodstock in Len's Champion, the only fly-in to brave the gusty weather condition.

Roy toured us around his hanger to update us on the progress on his Tri-Pacer conversion to a conventional gear Pacer. He hopes to have it covered this year. The other project, a Nik Smith Epic 3000 has the engine (O-235 108 hp Lycoming) fitted and wings completed since last summer. Front and centre in the hanger was Roy's fabulous 1950 Cub Special (looking better than it came out of the factory).

Many thanks to Roy and family for a most enjoyable evening.

Midland/Huron

At the May meeting, there was a

review of the recently acquired Aeronca Chief fuselage parked in front of the terminal building. Tim Deaves updated the group on the May 26 Fly-in/Canadian Vintage Motorcycle Group (CVMG) Swap meet. A clean-up bee was designated to take place May 12.

Those interested then moved to the hangars to look at the Aeronca floats and wings.

Future events include meetings of the CH-601-XLB Builders' Group, and the pending fly-in/swap meet.

Chapter 85 (Vancouver)

Presidents Message July 2018

The annual awards banquet was held on April 7th at the Delta Town & Country Inn. One of the key events was recognition of the Zenith 750 Cruiser building team and members who have participated in the project over the last 2 ½ years. Builders have come and gone over that time and a core group of about 8 have diligently kept the project moving ahead. In total, 16 members have been involved over the last 2 ½ years. The guest speaker for the banquet was Darryl Murphy of Murphy Aircraft from Chilliwack, BC. Darryl gave a good overview of the homebuilt industry over the last 30 years and noted that many kit companies have come and gone over that time and only a few that have had a consistent presence over that time. Darryl mentioned the key designers and manufacturers of kit aircraft include; RV, Zenair, Sonex and Murphy. His view was that each of these companies was able to offer new and evolving kit designs rather than being single product produc-

ers. It is likely that this will be the last Award's Banquet to be held at the Town & Country. The Chapter was notified that the property has been sold for development of a Casino.

Chapter 85 held its pancake breakfast on April 8th with marginal weather conditions and a turnout of about 40 people. One highlight was information from a member who had just returned from a visit to a small airport in NW Washington and noticed a Pober Pixie. Upon discussion with the owner, it turned out that this was a Pober Pixie built by Chapter 84 members in the 1970's and subsequently sold (opposite, centre left). It was great to see that this aircraft is still active and in flying condition.

The annual Delta Heritage Airpark Fly-In was scheduled for the last Saturday in June (June 30th) and for the first time in recent history it had to be cancelled due to weather. Environment Canada did not cooperate and sent in a low pressure system and trough with rain and low ceilings plus a high of only 17C for the appointed day.

Cleanup day at DHAP was held 2 weeks prior to June 30th and this proved to be a day of excellent weather. The skies were clear, winds were light and temperatures climbed to a high of 30C. Volunteers for the airpark cleanup trimmed underbrush at the approach threshold to runway 25, repainted marker cones for the taxiway, painted fence boards, weeded flower beds and cut grass in the tie down areas and runway. Lunch was served in Mary's Place and in total, 35 volunteers came out and pitched in.

Under normal circumstances, the



Across Canada

RAA Chapters in Action



Left: There was a great turnout for Chapter 85's clean up day. Below, clockwise from top left: the Pober Pixie built by chapter members in the 1970's; the interior has been finished on the Cruiser; door installation, and installing RTV sealant on the Cruiser.



Fly-In incorporates the “July” pancake breakfast and this was also cancelled, but was rescheduled to the usual second Sunday in July. This day brought good weather and about 50 breakfasts were served. A few people flew in and included arrivals in a Beech Staggerwing and a Harvard.

The first of the 2018 biannual Metro Parks Management Committee meeting was held at Chapter 85 on June 20th. This meeting introduced a substantial change to Delta Airpark with the re-zoning of Metro Parks district boundaries. Up until now, Delta Heritage Airpark (DHAP) has been in the parks Central Zone and now DHAP will be part of the Western Zone. This means a change in Parks Manager to whom DHAP ultimately reports to. The meeting was a good opportunity to meet with the Manager for the Western Zone and the indications were that Metro Parks support the Airpark activities and program. The 10 year budget forecast for airpark maintenance and operation was approved as prepared by the Delta Airpark Operating Committee (DAPCOM) and presented by John Macready, DAPCOM Chairman.


The Zenair 750 Cruiser building project is in the final stages. The interior has been finished and the seats have been installed (previous page), the control stick grips and radio push to talk button have been finished and tested.

Final work around the engine and firewall forward is being completed. Application of “RTV” red high temperature silicone sealant (rated to 650 °F) has been done for all feedthrough grommets in the firewall and along the firewall to forward fuselage skin inside joints (Figure 4). A leak in the engine fuel primer had developed



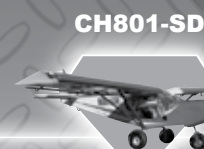
and this is being repaired. No other leaks were noted in the fuel system during the initial leak test. Once the primer leak is repaired, the engine can be started. The one item of concern for now, is the propeller tip clearance to ground which is 5 ½ inches. Larger wheels and tires are being considered and a 1 ½ to 2 inch shim at the nosewheel fork to strut attachment has given added tip clearance at 8

inches. The propeller is a Whirlwind ground adjustable 72 inch model and the wheels are 5.00-5 wheels and rims.

The finishing details for the Cruiser are the ones that seem to take substantial time, but it is a case of every builder wants to get this right after all of the time and effort expended so far. 

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