

# RECREATIONAL FLYER

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**RAA**  
RECREATIONAL AIRCRAFT ASSOCIATION  
RÉSEAU AÉRONAUTIQUE AMATEUR • CANADA





## From The President's Desk

Gary Wolf RAA 7379

### Chapter Status Reports

Each year all chapters must send in their status reports in order to have their activities insured under the \$5 million RAA Chapter Liability Policy. Please name the President, Treasurer, Secretary, and two other specifically-named members. All must be National members of RAA Canada.

Please also send in a complete chapter list, separated into two groups, those who are National members and those who are not. Alphabetical order is best but not necessary. For all names please include contact information.

Please snail mail the list to RAA Canada or email to garywolf@rogers.com .

### Challenger UL Lift Strut Bracket Failure

This summer a Challenger UL lost a wing in flight when there was a failure of a U-shaped aluminum "Rony bracket" that attaches the lower end of each lift strut to the fuselage, this according to the TSB report sent to RAA Canada. The Rony has a flat bottom and a centre hole through which the bracket is bolted to the longeron. In this case the bracket failed at 400 hours when a crack emanated from

the centre hole and the Rony broke, separating the lift strut from the fuselage. The report also states that with an electron microscope were found many more cracks and delamination beneath the surface, and suggests that these could have been introduced during the manufacturing process.

TSB inspected other aircraft and of 22 samples they found 8 with cracks, at hours ranging from 4.1 to 830. The report states that some cracks were the result of fatigue and others were from material delamination.

The TSB report indicates that the manufacturer requires that Challengers have a 50 hour inspection of these brackets and associated hardware but the documentation does not give torque values or a method of inspecting. The manufacturer places a life limit of 500 hours on the brackets.

### Rotax Service Bulletins

Rotax has issued a Mandatory Service Bulletin and two revisions, the latest on December 21 2018, for the new 915i series turbocharged engines and some 914 series. Sodium cooled exhaust valves must be exchanged for solid stainless valves before next flight,

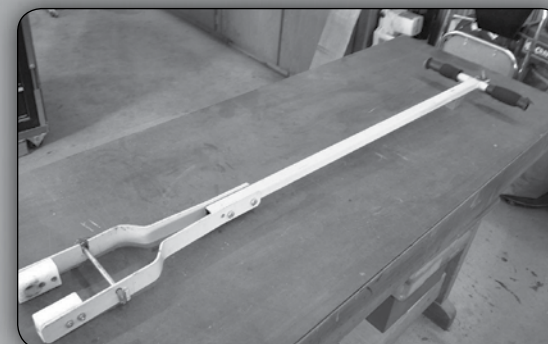
essentially grounding the engines. Details and a list of affected engine numbers are at [www.rotax-owner.com](http://www.rotax-owner.com) . There are two further bulletins for the 915i, one requiring the replacement of the oil pump housing on some 915i series engines. The other requires an inspection of the turbocharger. All Rotax owners should subscribe to the [www.rotax-owner.com](http://www.rotax-owner.com) bulletins to keep up to date on running changes and safety issues.

### 121.5 ELT's

Although the FAA is not prohibiting the use of 121.5 ELT's in the US, in six months they will prohibit the manufacture, import, or sale of these units. This will necessarily reduce the availability of parts, specialized batteries, and serviceability of the 121.5 ELT's.

In 2008 Transport Canada was determined to require 406 ELT's and this went to Parliament as part of an omnibus bill. When Harper prorogued Parliament this bill died on the floor and the 121.5 ELT's remain legal in Canada. At present either a 121.5 or a 406 satisfies the ELT requirement for Amateur, O-M, Limited, and Certified

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Above: A beautiful DC-3 sits on the showline at Arlington, 2016. George Gregory photo.  
On the cover: A radial engined Murphy Renegade.





# Fairchild 24

Mike Davenport



THE FIRST FAIRCHILD THAT I EVER LAID EYES ON was landing on a gravel strip in Wainwright AB in the early '60s. It was a C119 of the RCAF. It was nicknamed the flying box car and had just about the same look and charm.

The next Fairchild that I saw was in 1987 and was a whole lot smaller but way prettier, even though it was in pieces while undergoing restoration in Aldergrove, BC. I would see a lot more of this one and its owner over the years when I moved into a hangar next to them.

The Fairchild 24 first appeared as a two seat aircraft in 1931 and grew in the next many years through 16 variations with engines ranging from an inverted 4 cylinder 90 hp American Cirrus through a 7 cylinder 110 hp Warner Scarab on the 24C-8 and 24C-8A. Through 1934 and 1935, not only were the engines changed but also

the model 24 changed in shape with a new nose, larger wingspan, different wing struts and new rudder design. Sometime in 1934 or 1935 a third seat was added. Wing flaps were added in 1935 and became an option. By 1936, the 24C-8E offered the 145 hp Warner and the 24C-8F had the 145 hp Ranger. In 1937 two more models were added; 24G and 24H using the Warner radial and a 150 hp inline Ranger. This same year the fourth seat was made available. If you are still with me through all of this, in 1938 the J and K models were

offered and that brings us up to Werner Griesbeck's acquisition.

Production of a military version continued during the Second World War with sales to the US army and navy as well and the Royal Air Force. Fairchild discontinued in house production of the F24 series in 1946 and contracted with Temco of Dallas TX who built several hundred of the models F-24R46 and the F-24W46.

The one in our hangar is a Fairchild 24K, given serial number 3304 when it was built in Hagerstown, Maryland. In

the spring of 1938 it was delivered to its first owner as NC19189. That owner was a corporation named Aircraft Service Inc., located at the municipal airport in Cleveland Ohio.

An owner had to have significant resources available to buy a Fairchild in 1938. A Standard model was priced at \$6350 while a deluxe model was even more as it included flaps and wheel pants. To give this some perspective the average annual wage in 1938 was \$1700.00 while a house might cost as much as \$3,900.00. One of those who





could afford a new airplane was the then president of Pan American Airlines. Juan Terry Trippe purchased the next one on the line (ser. # 3305) and had his mounted on Edo 2880 floats as it was to be for his personal use, not that of the airline. W. K. Vanderbilt II also bought one with serial number 3310. Even the president of Fairchild wanted to have one and kept serial number 3315 for his exclusive use. As you can see it took some significant wealth to purchase an airplane in the depths of the Great Depression.

NC19189 passed through the hands of some 18 owners until it arrived in Schellville, CA. Brian and Beverly Esler purchased it with the intent of doing a full restoration but instead sold the project to Werner Griesbeck of Aldergrove, BC. This involved a complex deal that included a freshly restored Aeronca L-3.

At this point in its long career, NC19189 had just 2223 hours on the airframe.

Werner began a restoration that would take the next 4 years. Just getting the project home involved a round trip of some 1860 miles and several days. After months of sorting out past ownerships and getting the appropriate bills of sale, he was able to get the aircraft registered in Canada as CF-BWW,

His experience in wood and fabric work has stood him well, having previously done a number of restorations. These included several J-3 Cubs including a "Flitfire" replica, the Aeronca L-3, a Champ and of course his other current aircraft, the 1941 Porterfield.

After getting the parts home and sorted, he removed the wooden fuselage formers and then sandblasted and epoxied the fuselage. Once that chore was done, he reinstalled the wood formers that give the Fairchild its distinctive shape. The wing, built by Ruth Spenser of Anderson California in 1979 had the original spars but she made all new ribs and installed new cables and hardware. This work was so well done that little more than minor touchup was required. The original Grimes landing light was overhauled and reinstalled. Both 20 gallon fuel tanks were repaired and reinstalled.

Both the stabilizer and fin required extensive repairs. Werner rebuilt both giving each a new rear spar and new top and bottom plywood skins.

The left door frame was built from scratch using the N.O.S. (new old stock) right door as a guide. The Fairchild 24 has a unique quality in that the side windows can







be rolled up and down. This helps improve picture taking and also lends a decidedly cool factor when taxing in at a flyin. To facilitate this, new "Model A Ford" window winders were installed. The door panels are upholstered using the same material as the seats.

The instrument panel contains as many overhauled vintage instruments as could be found including an airspeed indicator complete with the Fairchild logo. A modern radio was installed in one of the instrument openings. The transponder is hidden in a special side pocket that opens for use but can be closed for that 1930's look when the aircraft is on display. A 406 ELT completes the package.

A new stainless steel firewall had to be fabricated to replace the original as it was unlikely to get Canadian approval seeing as how it was made of a sandwich of aluminum and asbestos! He then went completely through the inverted 6 cylinder Ranger 6-440-C2 even though it had less than 50 hours since a military overhaul. All new main bearings and thorough check of all the other bits and pieces that make up the 175 hp engine was done before installation. A refurbished 3 gallon oil tank

## Fairchild 24

SPECIFICATIONS as delivered:  
Length..... 24 ft. 10"  
Wing Span..... 36 ft. 4"  
Wing Chord..... 66"  
Wing Area..... 174.4 sq. ft.  
Empty Weight..... 1600 lbs.  
Gross Weight..... 2550 lbs.  
Top Speed..... 124 mph  
Range..... 404nm  
Service Ceiling..... 12,700 ft


ensures a sufficient supply of lubricant. A new wood Sensenich propeller and a polished aluminum spinner completed the firewall forward installation

LeBaron Bonney of Amesbury, MA provided the appropriate vintage material for not only the seats and doors but also the headliner. The interior was gutted and replaced with this immaculate blue and grey fabric reminiscent of the era. Each seatback contains a leather trimmed map pocket

Flying again for the first time since July 23, 1979 on July 30, 1991, almost exactly 12 years to the day; this took place at his home airport of Langley BC.



To date he has taken it to Oshkosh and on many trips to flyins and airshows in British Columbia. As well he has been up and down the west coast to California, Washington and Oregon accumulating another 700 hours in the process.

As most who own restored antiques or classics know, the work is never done and if one has some of the attributes of OCD, it can always be just a little bit better. BWB is no exception and is in a constant state of renewal with nothing exempt from the master's critical eye. This is confirmed by the fact that Werner has received a wall full of awards for his workmanship during the past 23 years. Some of these are: *Champion 1991, EAA Chapter 85, Delta BC; Best Cabin Monoplane, 1991 NWAAC Arlington WA, Best Cabin Monoplane, 1992 NWAAC Arlington WA, Grand Champion Antique, 1994 NWAAC Arlington WA, Special Award, 1994 Merced CA, Outstanding Closed Cabin Monoplane, 1995 EAA Oshkosh; Overall Grand Champion, 2014 Hood River OR.* 

*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 creampuff Stinson 108.*

# Adventures in Scrounging

Reminiscing on what some people will do to power their wings / Bill Weir

THERE IS A STAND ALONE AUTO SERVICE garage across from the St Mary's Rental Store where I seem to patronize more and more. Renting a hammer drill to put a hole in the foundation wall is so much easier than using a star drill and declining brute force.

The garage had a 1980-something Subaru station wagon kind of off to the side and it didn't move for quite a while. To engine-heads, the Subaru EA81 is the hundred horsepower engine for conversion for aircraft use. Finally, I just had to enquire about it. It soon came out that the shop owner did not own the car. It seemed that the car had been brought in for a safety inspection but the first look established that there was so little metal below the doors that trying to bring it up to even the most minimum standards was beyond all reason. I was well aware of what we were talking about. My first Subaru was a station wagon and when I lifted it by a chain hooked behind the front bumper, the roof had wrinkled.

This car was obviously my kind of Subaru and when something was said about its owner having paid a scant two hundred dollars for it it became more attractive yet. Our conversation ended with my having a name and phone number and the information that said Subaru owner lived above one of the pizza stores in downtown St. Marys. When I returned to my pickup I tried to phone using my cell phone but discovered what others have confirmed: cell phoned do not work in the business district of St. Mary's. After making an appointment from home, I knew from climbing the stairs that we wouldn't have very much in

common. But then again, who *is* supposed to sweep up the cigarette butts in the corners of the stair treads?

My man's apartment proved to be rather bleak with kitchen in the middle to the right, daybed to the left, bathroom to the far end and everything else one might own immediately at hand. It was obvious that the broom and mop I didn't see didn't exist. There wasn't a chair *not* being used for storage of some item of clothing so one of the niceties of hosting did not rear its head. My cable guy son says he visits places like this all the time and finds that when he calls again to determine if the tenants have their financial affairs in order and want their service reconnected, he discovers that they have a dish.

Coin of the realm changed hands and I left with ownership for the car. It was only after I had delivered the remains for disposal that I saw that it was in someone else's name. Cable guy son came over Saturday to help with bring home my new car. We loaded the pickup with tools, radiator water, gasoline tow rope and all the good stuff and back to the shop in St. Mary's. Just for luck, we gave it a try and the amazing happened: *my new car started.*

We said so long to the garage owner and with son driving the Subie and I behind in the pickup, headed down the street, right at the corner and right again onto a less traveled gravel road where guardians of the peace are rare and the missing of license plates would not be the opener for rather one-sided discussions.

Old memories of similar expeditions  
*continued on page 17*



# When You Least Expect It...



Fred Grootarz

*The dangers lurking around the base-to-final turn and a closer look at what to do and what not to do*

WE ALL LEARNED the Fundamentals of Flying during our primary Flight Training to graduate with a PPL and use those skills every time we go flying. Why then is it that we read in so many accident reports that misuse of one or more of these basics are quoted as contributing factors to the accident?

I believe some of the answers can be found in a pilot's Human Behavior, incorrect Pilot decision making, and a certain lack of training/ recurrency, much as we see in drivers on the road. Both have to go through some formal

training and graduation to confirm they understand the fundamentals, before they are legally let loose into the real world around them.

When things get "hairy", a driver knows subconsciously that applying the brakes slows the car down and thus hopefully avoids hitting unwanted obstacles. However, we all know that the same subconscious action does not always bring the same results if the road surface is icy or slippery. If anything, it then depends on the skills of the driver to initiate different maneuvers to avoid hitting

these unwanted obstacles and bring the car to a safe stop. The driver's skills to instantly use correct maneuvering now become crucial to the outcome of the situation. Those skills can be taught and learned. If you don't have these skills, or have forgotten them because of lack of practice, the lack can have dire consequences.

A pilot flying an airplane is exposed to a similar behaviour when things go sour. Statistics confirm that General Aviation accidents during "Maneuvering Flight" usually occur when flying low and slow over the ground, and can quickly develop into an unwanted disaster. The "turning base to final" maneuver is a prime example of this. Unfortunately it remains one of the top pilot killers year after year.

Usually the turn of events goes something like this: first the summarized version:

The pilot noticed that he was overshooting the extended centerline. He banks left and adds a little left uncoordinated rudder in an attempt to bring the nose of the airplane back toward the runway. The aircraft rolls to the left and he compensates by adding some right aileron to hold the 30° bank angle. As the nose drops slightly, he compensates by pulling back on the yoke and adds a little power to maintain airspeed. Suddenly, the aircraft snap-rolls left to 150° of bank. He instantly pulls back on the yoke to get the nose back to the

horizon and, at the same time, uses opposite aileron to turn the aircraft back to right. Without warning, the airplane stalls, rolls inverted and spirals into the ground. Game over.

Now let's take a closer look in slow motion how this maneuver pans out:

The pilot does not realize the wind strength pushing his airplane on the downwind. As a result the turn to base is wider than anticipated. While

*Without warning, the airplane stalls, rolls inverted and spirals into the ground. Game over.*

flying on base, the wind continues pushing the airplane further away from the runway. Before he knows it the pilot has passed the extended runway centre line, which he wanted to turn to so that he would be aligned straight with the runway. Naturally he wants to correct things to get back on the intended approach path. To make up for this "overshoot" he decides to bank into a hard left turn in an attempt to get back to align with the extended runway centre line.

Now the trouble begins. We all

know from practicing steep turns during our flight training, at the latest when reaching the 30° we need to gently increase power and add a little back pressure to keep the nose from pointing earthbound. Coordinated or not, if the bank angle exceeds 30°, call the turn off immediately and try getting the airplane back to a level flight attitude. Forget about the Landing. Break off the landing maneuver and convert the landing into an overshoot maneuver. Go around and try again for a new landing. By now you know what got you into this situation in the first place, so on your second try you can be ready to deal with the wind and/or any other distraction and turn in time to line up with the extended center line. Remember, you usually are only 500 feet above the ground at the beginning of that base to final turn.

However, let's go back to that unwanted base to final turn which prompted you with your first corrective action by entering into a hard left bank. Because at this point you are focused almost exclusively on getting back on the extended center line, you easily forget to use adequate rudder for a coordinated turn. Big mistake. Now the airplane is skidding in the turn and you feel the need to enhance the turn by adding left rudder. Another big mistake. The sudden rudder input prompts the airplane to tighten the turn all right, but at the same time increases the nose point-



ing further earthbound. Your brain overpowers you and tells you “I can do this; I can still save this landing”.

You suddenly realize that you are about to enter into a spin, or worse a spiral dive. As a panic reflex, you pull the yoke full back in an attempt to stop the nose from continuing that downward trend. To speed up your attempted recovery, you simultaneously feel the urge to level the airplane by yanking the yoke for a hard right, the idea being to get the nose up and hopefully turn right to level the airplane. But that doesn’t work! Pulling back on yoke in fact is putting pressure on the elevator and thus the nose will come up. Regardless of the current unusual attitude you are in, pulling up the nose means increasing the angle of attack. That by itself is a big no no. Simultaneously you turn the aileron to the opposite direction hoping to get you back to level flight, so you can continue on your short final with the landing. Rudder one way, aileron the other way and on top pulling the elevator to up the nose (setting up for a stall) is a guarantee for disaster.

What started out as a simple corrective maneuver has been converted through several incorrect corrections into the classic cross-controlled stall situation. The lower wing rotates around its axis and has been deprived of sufficient airflow to maintain lift. As a result, that lower wing stalls.

Simultaneously the downward pointing nose is being pulled up, increasing the angle of attack, while the upper wing is moving faster through the air and still has sufficient airflow / lift to keep flying. As it

*Remember: The key factor in recovery from a stall is regaining positive control of the aircraft by reducing the angle of attack.*

keeps on flying, still with left rudder, with the aileron now switching sides for a reverse turn, the upper wing is being pulled forward over the top of airplane and being sucked into the left rotation of the by now developed spin. At this point the airplane is inverted and in an uncontrollable spin, spiraling with the nose pointing straight down. You nosedive into the ground like a lawn dart and your brain doesn’t even have time to register it. Game over.

Remember: The key factor in recovery from a stall is regaining positive control of the aircraft by reducing the angle of attack. At the first indication of a stall, the wing angle of attack must be decreased to allow the wings to regain lift. It should be noted that too much forward pressure could hinder recovery by imposing a negative load on the wing.

Once you enter the spin, you won’t have time enough to do a correction recovery maneuver! There simply isn’t enough time and altitude left for a recovery procedure. By the time you realize you are in a spin,

you have likely less than 400 feet to recover. A typical spin takes about 350 to 500 feet to recover from (if you react quickly and correctly). You can’t recover the aircraft in time before hitting the ground.

#### Conclusion and Observations:

Once you have realized that you have messed up in the base to final turn, further corrective making decisions are overshadowed by some form of anger directed at yourself. Decisions made in anger easily influence the further decisions you make. The normally rational thinking process is no longer the same. That may result in unwanted consequences.

So the next time you overfly your turn to line up with the center line, and you try to correct by entering into a steep bank which then exceeds the 30° bank angle, call it quits and immediately initiate a proper GO AROUND! It will save your day and you will live to tell about it. Trying to overcorrect and putting yourself in harm’s way just isn’t worth it. Besides, who doesn’t mind 0.1 hrs extra flying time in his logbook. Flying a safe overshoot procedure on the go around can be another challenging affair on its own; but that’s a subject for another discussion.

Fly Safe! 

*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.*

# An Affordable Aircraft?

IN AN ONGOING EFFORT to bring awareness of affordable and simple aircraft building to our group, I will be including simple designs that one can build relatively inexpensively. This month, I present the “Affordaplane”. This is an ultralight design that has been around for a few years and may be assembled with minimum tools and materials. The Affordaplane was designed by Dave Edwards in 1999 as a way for an average person to get into aviation.

Dave describes the aircraft on his website, “The A-Plane’s fuselage is made of square aluminum tubing, with flat plate gussets bolted to them to hold it all together. I designed it this way for a number of reasons: One is that it’s extremely strong but light. Gyrocopters have used this method for decades. Two is you can cut it with a chop saw or jigsaw, drill it and it is basically done. There is no welding

involved at all with this airplane. You do not have to have welding equipment, and you never have to worry if your welds will hold. Plus, everything is out in the open, there is nothing hidden that can cause problems. You don’t even need to paint it.

The wings and tail are made of round aluminum tubing and is of the same type of construction as many other ultralight airplanes. They are covered with Dacron, shrunk with a clothes iron, and painted with house paint. It looks great and holds up for years. The airfoil used gives you the most performance out of 40 hp. The stall is gentle and straightforward. I designed full span ailerons for the wings. Crosswinds are no problem at all. She goes where you point her. And if there is one thing I am most



proud of, it’s how she flies. In a word: Great! All the pilots that have flown her say she is a very sweet flying airplane”.

Plans for this aircraft are downloadable from Dave’s website for \$19.95 (yes, this is correct, not a typo). Dave’s website is [www.affordaplane.com](http://www.affordaplane.com).

*From the December Slipstream, RAA London-St. Thomas Newsletter*

## Safety Advisory: Quad City Challenger II

The Transportation Safety Board of Canada wishes to inform you that a safety advisory (A1800106-D1-A1 – see attachment) has been issued to your organization. The safety advisory identifies the failure of attachment brackets securing wing lift struts and spars on the Quad City Challenger II Advanced Ultralight aircraft.

We encourage your organization to review the attached safety advisory and respond by taking necessary actions. If you have any questions concerning the above-noted subject, you may contact Mr. JP Regnier (Senior Investigator) or Ms. Natacha Van Themsche (Director of Investigations – Air). Contact information is provided in the advisory.

Sincerely,  
Jean-Pierre Regnier



# HIGH FLIERS



# BEWARE

From my experience in general aviation and recreational flying I've noticed that very few pilots choose altitudes much higher than about 6,000' ASL. That could be because

is crucial. As an aircraft climbs into thinner air, there are fewer molecules of all gasses. However the nitrogen, water vapor, carbon dioxide, AND the oxygen, still exist in the same propor-

## What Happens at Altitude

Let's follow a hypothetical pilot on his climb out from sea level. Call him Peter. When he reaches 5000 feet, the retina of the eye, the most

many single-engine airplanes have trouble getting up into the 8 to 10,000' levels, but often, pilots prefer to be a bit closer to the ground, especially on short, recreational flights. Let's face it, the scenery is more interesting when you're able to actually see some of the details you're flying over. There were very few times even when I flew commercially that it would be necessary to climb over 10,000' feet. Most jobs required lower level visibility, and about the only reason for higher altitudes was to get over mountains.

Maybe because we're a group of "low flyers", we don't give much thought to oxygen systems in G.A. airplanes. But we really ought to. More airplanes are quite capable of the higher altitudes, and some pilots routinely hop up around 12,000' on their VFR flights to get the full benefit from their turbo-charged engines. Even the lighter homebuilts are capable of higher altitudes with engines like the Rotax 914 on the nose.

## The Dangers of High Altitudes

We have all heard of hypoxia ... the condition where our body is deprived of adequate oxygen supply. And although pilots deny any effects, we are susceptible to it when climbing to the higher levels. The brain functions normally when we breathe air that contains 21% oxygen at the right pressure. What is known as the "partial pressure" of the oxygen,

there is just less of them all. You could think of it as the difference between 21% of one dollar and 21% of a half dollar.

## How Does Oxygen Enter the Bloodstream?

Back in paramedic school, we learned basic functions of respiration. Simply put, imagine a tank containing oxygen at a pressure of 100 lb. per square inch is connected to an empty tank. When the valves are opened, the oxygen in the full tank will force its way to the empty one. That flow will continue until both tanks reach pressures of 50 lb. per square inch. A gas at higher pressure always exerts a force toward a region of lower pressure. In our lungs, the inhaled air contains more oxygen than what is in venous blood. Therefore the oxygen will diffuse across the membranes in the lungs and into the blood stream. The same basic pressure differences also allow oxygen to make its way into cells and tissues in the entire body.

In other words, if the pressure of oxygen in the atmospheric air is higher than oxygen in the blood, then the O<sub>2</sub> molecules are easily transferred into the bloodstream in the lungs, until there is equal pressure on both sides of the bloodstream walls. Once the oxygen is inside the bloodstream it attaches to "hemoglobin" for transport to the brain and all other areas of our bodies.

oxygen-sensitive organ of the body, will be most affected. Peter's night vision will be the first to suffer. Instruments and maps are more difficult to read. Ground features and lights are easily misinterpreted. Most pilots feel they are functioning at peak efficiency at this point, and are unaware of the insidious degradation caused by hypoxia.

Peter climbs to 10,000 feet. His night vision has degraded by up to 25 percent. His O<sub>2</sub> saturation has dropped to 90 percent and his brain is receiving the absolute minimum supply of oxygen required for optimum operation. This is the absolute highest altitude at which you should have any trust at all in your own performance. At the same time, Peter's judgment is already severely compromised. He has become euphoric, and feels that this flight is completely under control. But he is actually unable to self-assess his abilities. Symptoms such as tingling and headache may not become apparent for four hours or more at this altitude, although good judgment has long gone by the wayside.

Assume Peter is flying a turbo-charged, non-pressurized aircraft. He climbs to 14,000 feet. His blood oxygen saturation is down to a dangerous 85%. He is moderately disabled at this altitude. His vision will dim. His judgment, memory and thought processes are impaired. But



*Smoking a pack of cigarettes in the 24 hours preceding a flight can saturate as much as 8-10 percent of the available hemoglobin. This will raise the body's perceived altitude by as much as 5,000 feet!*

even at this point, he feels just fine, and is confident in his performance flying the airplane. He likely won't recognize his hypoxia, and he is in serious danger. On top of that, he will eventually land the plane, walk away and NEVER know he was ever in trouble.

As you can imagine, Peter's situation will get worse, and even more quickly if he continues to climb. I doubt there are many pilots who would intentionally get themselves into a corner like this.

Individual reactions to hypoxia vary with differences in body chemistry, general health and diet. The elevation where the pilot lives and is acclimatized to makes a difference. But consideration also should include temperature, rate of climb, and duration of exposure to low oxygen levels. Not surprisingly, alcohol will add to your problems. One ounce of alcohol in the blood will raise the body's perceived altitude by 2,000 feet.

The good news about altitude-induced hypoxia, and also the reason it goes unrecognized, is the quick reversal of the symptoms. As the pilot descends to a lower altitude and starts breathing denser air with a higher "partial pressure" of oxygen, his judgment returns to normal.

#### **Carbon Monoxide Causes Hypoxia**

Anytime Carbon monoxide is present, you must expect hypoxia. It comes quickly, and in high doses is often not reversible without assistance. This is a true emergency. High-flow oxygen through a non-rebreather mask is indicated for

sure. As mentioned earlier in this article, oxygen molecules bind with hemoglobin for transport in the bloodstream. Unfortunately, carbon monoxide binds with hemoglobin as well, about 250 times easier than oxygen can. In short order, most available hemoglobin can easily be saturated with carbon monoxide, leaving no room for oxygen. In more serious cases of CO poisoning, the patient is treated in a hyperbaric chamber. He breathes 100% oxygen at pressures greater than normal atmospheric (sea level) pressure. The higher pressure of the oxygen can "force" its way onto the hemoglobin, as it kicks off the CO molecules.

This opens up an opportunity for me to bash smokers by telling you that the major source of carbon monoxide in the blood stream is cigarette smoke. Probably no other self-imposed risk factor is as controllable, or as deadly as is the CO level in the blood. Smoking a pack of cigarettes in the 24 hours preceding a flight can saturate as much as 8-10 percent of the available hemoglobin. This will raise the body's perceived altitude by as much as 5,000 feet! You can be effectively in Denver while still on the ground at Vancouver, and suffer the effects of mild hypoxia right down there at sea level.


#### **Monitoring Your Blood-Oxygen Saturation**

Many pilots who understand the effects of altitude on hypoxia carry a tiny instrument called a Pulse Oxymeter. It clips on a finger, and provides a constant readout of the

oxygen saturation in your blood. What should you expect to see? In healthy individuals, sea level pressure should saturate the blood to about 97–99%. At 10,000 feet the saturation will drop to about 90% which is sufficient for nearly all basic life functions. But 93% is considered to be the low limit for normal cognitive ability. Still, you will probably feel euphoric, not recognizing the small mistakes in judgment and responses. If you climb further to 14,000' without oxygen, your saturation will drop to about 80%. By staying up there for any period of time, you could become very sick with vertigo, nausea, weak-

ness, incoordination, slowed thinking, dimmed vision and increased breathing and heart rates. You will be in serious trouble.

Obviously there is much more physiology involved in partial pressures, pressure gradients, saturations, diffusion of gasses and the mechanisms required for adequate respiration and perfusion to occur. The brain is very dependent on a constant and sufficient supply of oxygen. The first sign of trouble is always a decreased level of consciousness in the patient, the result of even a tiny drop in available oxygen. There are many situations and conditions that can cause

low O2 sats. High altitude is just one, but pilots need to understand and respect that possibility. 

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**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.

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
*Subaru / continued from page 9*

came back. There was the time we towed a school bus into Fanshaw Community College for students to undertake the learning experience of a brake job. I was towing with a Japanese pickup and son had the bus behind on the end of a chain with the engine running "to make the power steering work". It must have been Boxing Day or something like that, because there was almost no traffic. I had pretty well mastered keeping the chain tight when passing us appeared an OPP cruiser. We both saw the officer look at the bus, the chain, and the little pickup, and we both knew he must have seen the exhaust from the bus. Our hearts fell, and then we say the officer, good fellow that he was, say to himself, "I don't want to put this one in the book the day after Christmas" speed up, and disappear ahead of us. Pro that he was, he looked at neither bus nor pick-up driver.

We did have to jog along #7 highway and that's where the Subaru quit. We ran down the battery learning that it was out of gas. Fuel and a jump start and we were on our way again.

There was a time when old cars such as this one seemed

to deliver all sorts of good stuff but not any more. The airplane will have a CD player so even the tape deck holds no interest. I did take out the window motors—this had been a top of the line once—but I really don't know why they are an attraction to me. I towed the engineless car to the local auto recycler with my tractor with a slow moving vehicle sign tied on the back and he took it without charging. I think I know where there is another one.

As an aside, these old Subarus really have very little value in this salt besmirched country but farther south as in the US Southwest they seem to keep their value indefinitely. 

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**Bill Wier** was President of London-St Thomas chapter. His agenda was to convert the chapter to 100% National membership and he was successful. He owns a farm and has his own strip and flew his C-150 from it for many years, well into his eighties, and he was proud to say that he could still do a crosswind landing. Recently he gave up his medical and now his grandson flies the plane.

Bill has a large hangar on his property and he has given space to many members of London-St Thomas, and for many years he has hosted an annual fly-in BBQ at his airfield. Bill's birthday is February 29 so he has a birthday every four years, and this year he will celebrate his 23rd.



# Cruzer Update

William Bird

LAST WEEK WAS THE BIG EVENT of having the Cruzeiro completed to the point that it could be moved from the build and maintenance shop to its permanent home in the regular hangar. However, on start up for the move over, the engine showed no oil pressure on the Dynon display. There had been pressure the last time the engine was run (which was some time ago) so everything was immediately shut down. Either something had changed with the engine or the Dynon oil pressure sensor was now not working.

During the week, Sebastien came in and checked the Dynon and it seemed to be functioning properly.

The group arrived in fog this morning. Had initial discussions regarding the no oil pressure (maybe oil pump having lost its prime) issue and also thinking new fuel flow tests need to be done. Decided to tackle the oil pressure issue first.

An on-line article had been found which indicated some steps which could be taken to try to re-prime a Continental O-200 oil pump. One of the procedures involved removing spark plugs, using air pressure up the engine crankcase vent to provide pressure to force oil up into the pump, and then using the starter to crank over the engine and if oil was observed being pumped out of the

oil pressure gauge line fitting, then the pump was back to working properly. As the plugs were already out of the engine, this was what was first attempted. Eric Klassen had his small air compressor with him so the air pressure being put into the crankcase could be carefully regulated.

Meanwhile, John was organizing the movement of the big bench out of the maintenance hangar and into the Cruzeiro area.

After a bit of setting up and adjustment, the first attempt was made to prime the pump. Air pressure was applied and Cyril cranked the engine on the starter for 20 seconds. Unfortunately, no oil appeared out of the oil pressure gauge line. As the line was uncoupled at the end by the Dynon sensor, Eric Munzer suggested that maybe prefilling the line with oil might result in a better indication of any oil pressure from the pump. This was done and another attempt was made. Unfortunately, once again, no oil pumped out of the line. However, when the air pressure was started up, there was some air bubbling through the pressure line which did confirm that there wasn't a blockage in the line between the pump and the line opening.

As this didn't seem to be working, it was decided to switch to an alter-

nate procedure which the article had suggested. This involved adding oil through a pipe inserted into the oil filter mount location so that the oil might run down into the pump and priming it. The oil filter was removed, a pipe was inserted into the appropriate opening and an oil can was used to pour oil into the pipe (and hopefully then into the engine interior). This was done with the prop being stationary and then with the prop being hand turned backwards. The oil filter was re-attached and then the motor again turned on the starter. Sadly, still no oil was pumped out of the oil pressure line.

We then hooked up the battery charger and broke for lunch to ponder. The possibility was considered that a problem might be that the turning of the engine using the starter was not turning the pump fast enough to bring oil to the open fuel pressure line. (Or perhaps the pump needed some time for oil to drain to it before it would prime.) We decided that we needed a solid confirmation of whether the pump was or was not working and that the only way to do this was to risk a short engine start up and run. So after lunch, the plugs were put back into the engine in prep for doing this test. At this time, Gerald came along and indicated that he



*The Cruzeiro is out of the build hangar and being run up in this photo. It's now time to get all the bugs out, and a maiden flight can't be that far off!*

thought he had an oil pressure gauge which would fit the oil pressure line. The gauge was found and plumbed into the oil line in place of the Dynon oil pressure sensor.

The airplane was pushed outside into the sun which had finally appeared. Cyril did a start up and to everyone's happiness, the oil pressure gauge immediately registered pressure present and then stabilizing at an appropriate value. After running long enough to get oil circulated throughout the engine, the engine was shut down and the Dynon sensor plumbed back in.

Cyril did another start up and the Dynon registered oil pressure properly. Cyril then took the time to confirm that the mags were now ground-






Members get their heads together to troubleshoot during the run-up attempt, resulting in a successful run-up. Next on the agenda will be fuel flow testing.

ing properly, and that the current adjustment on the propeller resulted in about 2450 rpm when run statically at full throttle. All of the elec-

trical switches were cycled through, with everything working except for the flap control. As the light wasn't illuminating on the flap switch, Eric Munser felt this indicated the need for a fuse replacement. The Dynon was also indicating well except for a previously identified fuel pressure sensor problem (no reading).

People present were relieved that the work of the day did result in the engine no oil pressure issue being solved (at least for now) and that the engine internals are now fully lubricated. It was getting later in the day by this time so the decision was to wait until next week before starting on fuel flow testing. The remaining time was spent in moving some more items over from the maintenance hangar. 

## Bearhawk News

*Bearhawk Aircraft Announces Bearhawk Patrol First Flights and Bearhawk LSA Wins Award*

AUSTIN, TEXAS, OCTOBER 22, 2018 – Bearhawk Aircraft announced today the first flights of two Bearhawk Patrol aircraft built by customers from Quick-Build kits. Owner/builders Scott French of Iowa and an Australian threesome comprising Alan Arthur, Doug Harrington and Avon Furphy have completed, certified and flown their Bearhawk Patrols in September 2018.

A Bearhawk Patrol, VH-TUC, made its first flight in Perth Australia last month. This aircraft joins

two other Patrols currently flying in Australia. "Another in Perth was built from a Quick-Build kit. There is also scratch-built Patrol flying in New South Wales, Australia," according to Mark Goldberg, president of AviPro who manufactures Bearhawk kits. VH-TUC is powered by a Mazda rotary engine.

A second Bearhawk Patrol, N862SC built by Scott French, flew for the first time in Iowa last month. This aircraft was partly fabricated from scratch and kitted assemblies. Bearhawk Aircraft plans are available from designer Bob Barrows. N862SC is powered by a more cus-

tomary Lycoming O-360 engine assembled by Superior Air Parts.

"The latest Perth Patrol was built from our Quick-Build kit," Goldberg added. "One of the builders had many years' experience racing Mazda rotary powered cars, so they went with the Mazda rotary engine and an IVOPROP propeller."

Alan Arthur of the Patrol builders' threesome in Perth, told of the story behind the VH-TUC registration and its Lucy In The Sky With Diamonds name: "Narrogin Gliding Club (of south west Western Australia) has a Piper Pawnee tow plane with the registration VH-TUG [as in tugboat / tow plane]. When it came time to pick a registration TUC was available. So, with no other preferences, other than it is easy to say in

the circuit calls, we picked that one. One of the girls in the gliding club that I am associated with came over to look at the aircraft in the early stages of the build. She has a practice of naming everything and said to me, 'She looks like a Lucy.' We all said okay, but it has to have a subtitle. Reminded of the Beatles hit Lucy In The Sky With Diamonds, all of the partners agreed."

The Perth Patrol has an extended exhaust system and it is very effective according to Alan, "All the noise now comes from the prop and gearbox; and not much of that. Mazda Rotary engines have a reputation for being very noisy and it certainly was when we first ran it up with only a small homemade muffler. Desperate action was called for, so I ordered a custom 3-inch racing exhaust system for a Mazda RX-7 from Racing Beat in the U.S.

"The Mazda engine is water cooled with a large radiator each side of the engine and an oil cooler in the top scoop. Rotomotion Engineering of Perth did the engine build and provided lots of advice. It is a bit different than their usual street racer customer." Target horsepower is 210-240 which the builders are working on by more tuning. The engine spins an IVOPROP 76" Magnum three bladed propeller that is ground adjustable.

"Scott French, the builder in Iowa, built his Patrol mostly from scratch but using finished wing spars and ribs ordered through AviPro," informed Goldberg. "Scott had previously finished a plans-built Storch replica which he described as



a difficult build in comparison. He flies off his 1500-foot grass strip."

### McElhoo Best Homebuilt Award at Blakesburg

Bruce McElhoo won best homebuilt at the recent Blakesburg Fly-in for his Bearhawk LSA. Bruce's Bearhawk LSA was the first customer-built aircraft of the Bob Barrow's design. En route to Iowa, Bruce stopped at Mark Goldberg's Texas ranch/strip. "I built my Bearhawk LSA from an AviPro kit. I covered the fuselage with Poly-Fiber, and installed a new Continental O-200A," stated Bruce. "With paint on my clothes, skinned knuckles and a big grin, I finished the job in three and one-half years. Empty weight was a satisfying 821 pounds.

"After 50 hours of flying locally, I decided to try a 5,000-mile trip from California to the Midwest. My favorite fly-in is the Antique Airplane Association event in Blakesburg, Iowa. In addition to antiques, they welcome homebuilts, especially the old-time high-wing style of the Bearhawk. Apparently, the members judging liked my airplane and awarded a trophy for Grand Champion Homebuilt. The Bearhawk per-

formed and handled wonderfully. Average speed was 110 mph. Fuel burn was six GPH. Of course, I could have reduced my fuel burn by flying slower, but chose not to. I especially enjoyed landing on grass runways. We have so few of them in California."

Bearhawk Aircraft manufactures high quality Quick-Build aircraft kits for the Bearhawk 4-Place, and two-place tandem Bearhawk Patrol and Bearhawk LSA. Designed by engineer Bob Barrows, the Bearhawks have in common excellent performance and superb flying characteristics. Bearhawks are known for their short field capability, higher than expected cruise speeds, and very gentle slow speed manners. For utility and recreational use, customers around the world fly Bearhawk aircraft.

For more information on Bearhawk Aircraft, visit [www.bearhawkaircraft.com](http://www.bearhawkaircraft.com), or contact Bearhawk at [info@bearhawkaircraft.com](mailto:info@bearhawkaircraft.com) or 1-877-528-4776.

*Above: Bruce McElhoo flying the Sierra Nevada range in the area of Sequoia National Park. McElhoo lives at the base of those "hills."*





# MADE IN CANADA

*Darryl Murphy and His Iconic Airplanes / by George Gregory*

**M**URPHY AIRCRAFT has been a significant part of the world of amateur built aircraft for decades, and Darryl was recently inducted into EAA's Homebuilding Hall of Fame. His line of aircraft ranges from the biplane Renegade, the company's first offering, to the Murphy Moose, virtually a slightly scaled down equivalent to the DeHavilland Beaver. I was able to sit down with him and discuss the evolution of his product line.

The first aircraft was the Renegade. It had its beginnings after Darryl was injured in a hunting accident and laid up in a wheel chair. He had been hang gliding (his very first design was a rigid wing hang glider in 1979) and it was uncertain he would regain full use of his legs; so he spent his time recuperating to design a single place biplane powered by a Rotax 447 and featuring a truss fuselage built of aluminum angle - an aircraft he could sit in if his personal mobility was limited. The aircraft bears a striking resemblance to the present Renegade, but structurally was a different animal.

Interest was shown in the little biplane, and he decided to design a two place version. This was to feature an aluminum tube truss fuselage with extruded fittings that slid over the longerons and were held in place with Avex rivets; tabs coming off the top of the extrusion held square tubes to fasten the fuselage intercostals and create the load bearing fuselage truss. Stringers were added to round out the shape of the fuselage.

Wing spars were rectangular extrusions with anti-drag struts helping the wings to



keep their shape fore and aft, and stamped aluminum ribs slid over the spar extrusions. Avex rivets were used to hold everything in place. All surfaces are fabric covered.

When the Renegade first appeared, interest was not immediate. But in 1985 Darryl met Jim Campbell at EAA's Arlington Fly-In, and things started to happen. Jim was offered a ride, but initially was hesitant as Darryl did not have formal training as an aeronautical engineer. Darryl's future brother in law Robin Dyck did a demonstration flight and really beat up the airfield: Campbell was persuaded and went for a ride. This resulted in an 11 page article in Sport Pilot magazine in the late 80's. The next year they shipped 100 kits. Sun 'n Fun a few years later resulted in even more sales and in 1989 they shipped kits for 212 Renegades.

The little biplane was starting to garner international interest, but the German government was reluctant to allow the aircraft in their country since the aircraft was not designed by a professional aeronautical engineer. Richard Hiscocks - one of the designers of the DeHavilland Beaver - was brought on board to vet the design, and after his seal of approval, the kit was allowed in Germany. A working relationship was born between the two men, and Darryl considers Hiscocks his mentor.

Hiscocks offered involvement in the design of a new aircraft, which was to become the Rebel, a high wing cabin monoplane of considerable utility, float capable, and the company's most iconic aircraft. The design featured a huge interior with a double walled floor that could sleep two when the seats were removed, generous doors and all metal construction. Visibility is good.

The fuselage features semi-monocoque construction with bulkheads of stamped aluminum. The skins are .020" 6061-T6 aluminum, giving the fuselage



considerable strength; an aluminum sub-floor installed over the lower bulkhead sections provides a good base for seat mounting and a crushable floor for energy absorption and crash protection. Pre-bent aluminum tubing gives the doors their shape, which are then covered by aluminum skins on the lower half and large Lexan windows above. Hinges across the midsection of the doors mean the large side windows are able to fold outward and down. They can be

opened in flight.

Fittings are cut from 2024-T3 aluminum where particular strength is needed. The engine mount, rudder pedals, and control column are fabricated out of 4130 chrome-moly steel. All hardware used in the fuselage and wings is, of course, AN spec.

The two fuselage side panels are identical, as are the top and bottom panels, eliminating any chance for confusion (I've heard of people building 2 left wings when only one wing

is shown on plans). Even the corner-wrap sections have the same radius, and so are interchangeable. This commonality of parts makes for much easier building - and are more economical to manufacture to boot.

Six inch wheels with high profile tires are standard for the Rebel, giving it rough field and river bed landing capability. The standard bungee suspension provides excellent shock absorption, but - depending on the mission - an optional aluminum





*The two most obvious differences from the Rebel are the Radical's 36 foot. wing span and the factory approval for up to 220 hp*

spring gear is available, reducing drag and improving the looks. Murphy sells float kits as well: the 1500 and 1800 Series straight floats, also available as amphibious. Skis are no problem.

The SR-2500 Super Rebel - initially planned as a 4 place, 2,500 lbs. gross weight aircraft - also saw some involvement from Hiscocks, who unfortunately passed away before the prototype was finished. It was designed around the Lycoming 360 but there was a shortage of the engines due to all the RV aircraft being built, and they started looking at bigger engines. The company discovered many good used 6 cylinder engines were available at very low prices as very few people were building homebuilts large enough for the 6 cylinder engines. With the extra power available from the 6 cylinder engines it was decided to up the gross to 3,000 lbs. They also kept the original designation SR2500. A customer put the Vedeneyev radial in his SR2500. This triggered a large number of inquiries from customers wishing to do the same. The SR2500 design was modified to safely take the 360 hp Radial and once again with all the extra horsepower the gross weight was increased, to its present weight of 3,500 lbs. The Moose is capable of carrying six people, but in Canada must be flown as a four place - albeit with lots of baggage.

Some have even attached turboprop engines to these aircraft, but Darryl is of the opinion that it's not the best option,

*Opposite, top: Murphy's latest offering, the Radical, is lighter yet stronger than the Rebel thanks to improved tooling. It can take engines up to 220 hp and can haul a couple of bikes from racks on the wings. Opposite bottom, the Moose with its 360 hp Vedeneyev radial, is a capable, serious aircraft. And it just looks so cool with a round engine up front.*

*Other examples of the Murphy line: top, Steve Rhodes' beautiful radial engine Moose; Centre, the ultralight Murphy Maverick is a civilized, cabin class ultralight aircraft. Bottom, a Murphy Rebel on amphibious floats: a true homegrown Canadian bush plane.*





especially if Pratt and Whitney Canada's thirsty PT-6 is bolted to the nose. The fuel consumption is such that it negates some of the advantage of having 550 horsepower up front: you have to carry a lot of fuel to get anywhere, reducing the payload potential. Darryl feels a better option - if one must go turbine - is the Allison 250, which still provides a nothing-to-sneeze-at 420 ponies for a 30 percent improvement in fuel consumption over the PT-6.

The Yukon is step back, in a sense. The airframe was lightened back up to a 4 place aircraft, and with O-360's now becoming more available it's truer to the original idea of what is essentially a 4 place Rebel. It features conventional or tricycle gear.

The latest offering is the Murphy Radical. Based on the Rebel and Elite it encompasses all the modifications and experience gained in the last 34 years of manufacturing kit aircraft. Improved machines and tooling - especially a massive hydraulic press that now dominates the Murphy plant - have allowed single piece bulkheads and other similar parts that previously had to be built up of smaller sections and riveted together. CNC is used in the making of the parts with pilot holes punched or laser cut in place, greatly simplifying assembly and reducing the potential for mistakes by the builder. The most obvious differences from the Rebel are the Radical's 36 ft. wing span, the factory approval for up to 220 horsepower... and *bike racks*.

You read it right. Resembling rails for rockets, the aircraft can carry two bicycles, one on each wing, where the strut meets the underside of the wing. The bike mounts upside down, so the wheels are held aligned with the airflow, and Darryl reports very little difference in the performance or handling of the aircraft - perhaps a two mph reduction in airspeed. And it's pretty handy to have some lightweight transportation around that doesn't impinge on the cargo area.

Top: a Murphy Elite on amphibious floats; a Moose powered by a Lycoming 540; and another Murphy Moose, this time powered by the Bombardier V6.



Darryl is a big believer in all metal aircraft simply because they are the most durable in the field. Not everyone can afford a heated hangar, and storage outside can be hard on an airframe. Aluminum construction has proven itself as an optimal material

in this sense. It's also easy to repair in the field, especially with pulled rivets.

After our interview, Darryl toured me around the shop. It is dominated by a huge 3,000 ton press for rubber forming, a CNC milling machine and

More of Murphy Aircraft's tooling: lockwise from top left, The shop is dominated by the huge 3,000 ton press for rubber forming; 10' Shear for steel; power shrinker stretcher, and finally, 4,000 watt 4 meter x 2 meter laser





Strippit punch, a 4000 watt 4 metre by 2 metre laser, and other exotic equipment. The capabilities provided by the array of equipment is bringing in more and more contract work for other manufactures and repair shops. The Murphy factory is in fact quite well rounded. Besides their kitplane manufacturing, their main focus is sheet metal parts for aircraft but they have machining and welding capabilities as well. Their laser cutter is one of the largest ones in the area and is capable of handling 4 meter by 2 meter material up to 3/4" thick. Much of their work as a fabrication shop involves taking an old damaged samples from which they design and build new tooling. Quantities are normally quite small as the parts are usually for repairs where the customer can not find or wait for replacement parts from the original manufacture. In many cases the original manufacturer is no longer in business.

The kit plane business is an uncertain one. By the time the article appears in print Darryl will be 69

Top, CNC Strippit punch; 14' 400 ton press brake with rollers installed Left, The Moose is a serious bushplane.



Murphy Aircraft's manufacturing arsenal also includes their CNC milling machine and a 12' shear for aluminum. Top: Darryl is talking with a group interested in certifying the Moose.

years old; he says he's not ready to retire but that it would be nice to slow down and work on some personal projects.

A motorsport aficionado (a not uncommon pairing with aviation related hobbies), he has a couple of old sports cars and a dozen old motorcycles that need restoring.

Contrary to the belief of many, the aircraft kit industry is a hard business to make money in. In the 35 years that

span Darryl's involvement in the kit plane business, many endeavours have come and gone; many hours and lots of travel are necessary to be successful.

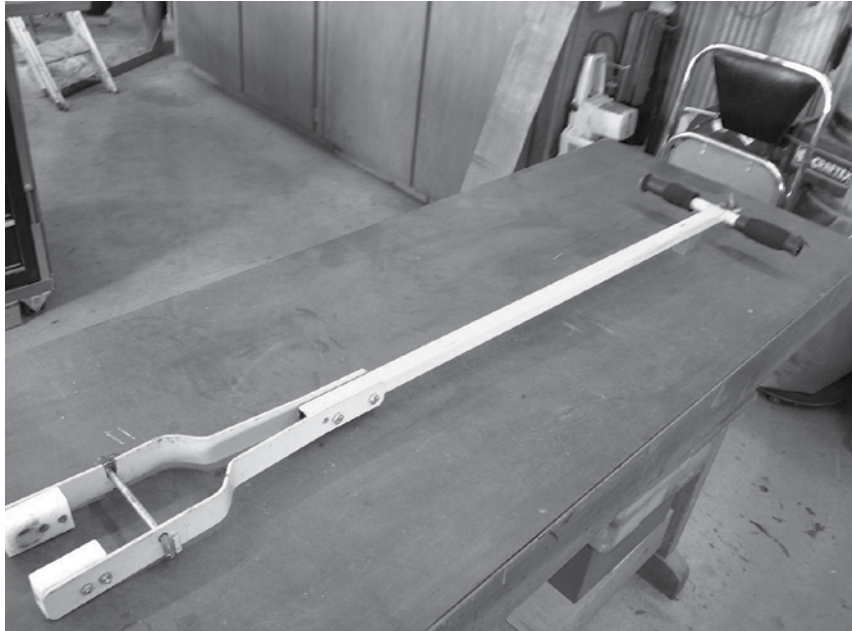
Darryl started the company on September 4, 1985. A year later he sat down to list what he'd accomplished, and the first thing that struck him was that he had not taken a day off for the whole year, and that 12 hour days were typical. If he retires, he thinks

It may be difficult to find a motivated individual to take over.

Meanwhile, Darryl is talking with a group that is interested in certifying the Moose. That would be an interesting development, but time will tell. That will be another story. **R**

**George Gregory** holds private and commercial ratings, and is a former flight instructor. He has been involved with Chapter 85 since 1993.





## Tail Dragger Dragging

*Jim Tyler*

ANYONE GROUND HANDLING a light aircraft for any length of time finds that a tow bar becomes a necessity. Particularly on non-paved surfaces, the need to get a good and safe grip on the airplane for parking in tight quarters is important.

Experience with my Kitfox, when it comes to manual ground handling, is that it's a non-event. The airplane has a convenient handle welded to the fuselage top left longeron immediately forward of the horizontal stabilizer. My Model 2 is light with a 526 lb empty weight and large, low pressure main wheels. There is little rolling resistance, no matter the surface. Lifting the tail with that handle and simply pulling or pushing the aircraft into place in the yard or into the hanger is easily accomplished.

My RV-6 is a different matter. There is no convenient handle on the fuselage. Rolling resistance is an

issue with its 5:00-5" tires and an empty weight twice that of the Kitfox. Even before its first flight, I realized I needed something that would allow for relatively easy and safe handling in the yard or hanger.

There are lots of commercially available tow bars available for a tri-gear aircraft and somewhat fewer for tailwheel aircraft. None seemed to be exactly what I needed. I looked toward my scrap material bins in the shop and in an afternoon, had a very serviceable tow bar put together.

The material is 1/2 inch square structural steel tubing and a small amount of flat bar. Aluminum would have been lighter however my scrap inventory at the time had little aluminum and lots of steel. The following photos and accompanying comments best describe the details.

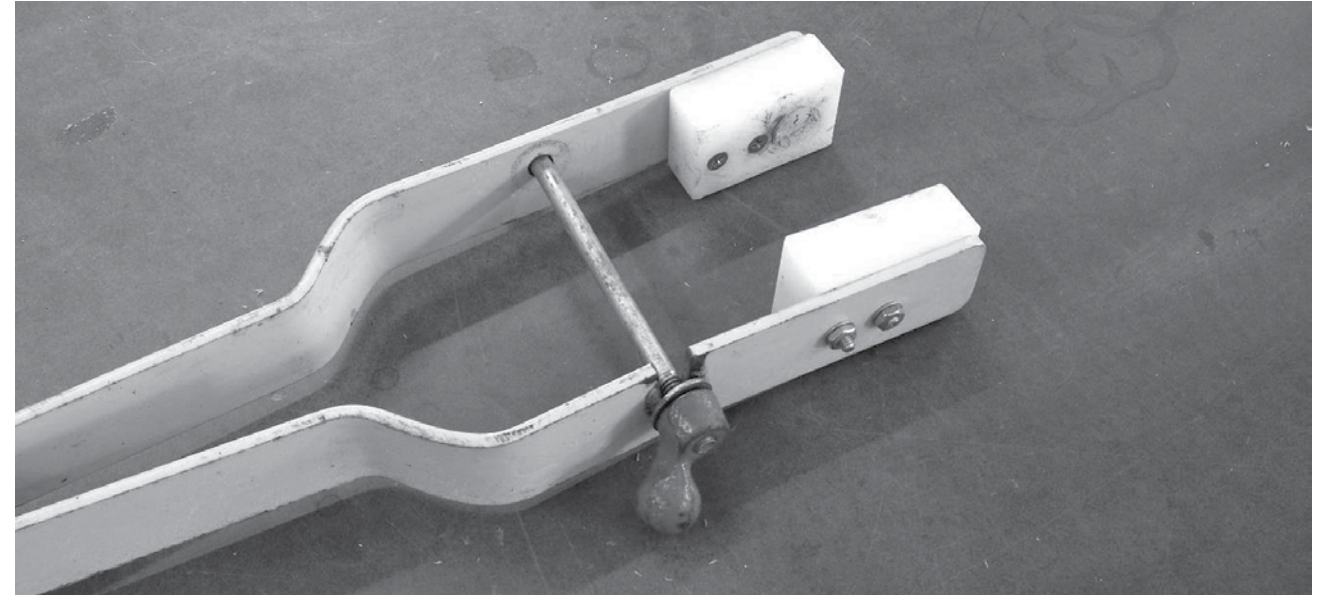
The tow bar, combined with the full swivel tailwheel on the RV-6, allows for precise parking of the aircraft in a hanger. It is easy to attach

**Top Left:** The completed tow-bar. Foam padded handles for comfort and a bright colour to reduce chances of leaving it attached during a pre-flight walk-around.

**Opposite, top:** The fork-end that grips the axle bolt and nut of the RV tailwheel. The white blocks are UHMW plastic with a hole bored partially through the blocks to "trap" the bolt head and the nut. The rod and the red wing-nut apply tension to the assembly when installed on the tailwheel. The UHMW attachment points prevent damage to the tail wheel components or paint.

**Opposite, centre:** The white UHMW blocks have round recesses that capture the bolt head and nut-end of the tailwheel axle bolt. On-off time is just a few seconds.

**Opposite, bottom:** The handle also has an eye and a clevis for attachment to a lawn tractor when the pull required exceeds the strength or traction of the ground handler.




or remove and in nine years of use, I have never had it slip off the tail wheel. Construction cost was my time only and all the materials used were salvage or scrap.

Aluminum would be more expensive and lighter of course. UHMW could easily be substituted with hard-

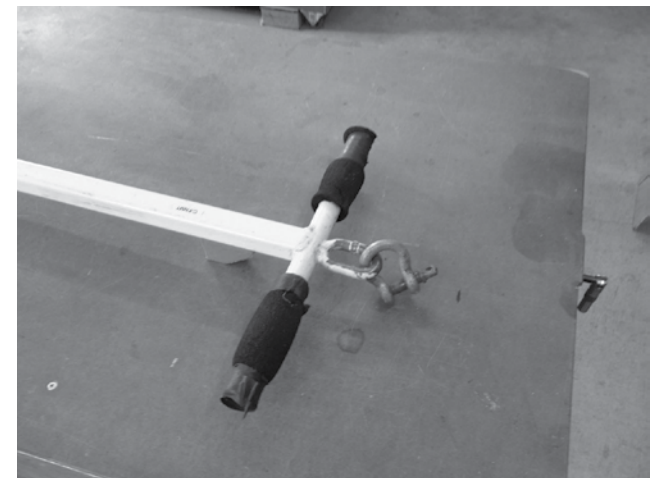
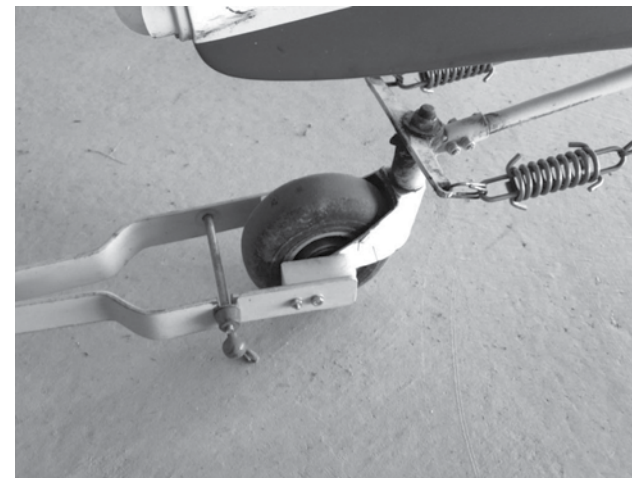
wood blocks.

I realize that many styles of tailwheel do not have bolt heads or nuts protruding from the wheel hub. This style works well with RV aircraft and similar designs.

I do not travel with the tow bar. I have a light weight and very compact

nylon webbing affair that does nicely when needed at an air field away from home. 

*Jim Tyler is a member of the London/St Thomas chapter and is the builder and current owner of a Kitfox Model 2 and a Vans RV-6*





# Splayed Wire Rope Repair: Carb Controls

Lee Coulman



THE CONTROL CABLES for the throttle and starting carb (“choke”) on my Rotax 912 have always been a nuisance. The cable end would splay out causing great gnashing of teeth and tongue biting to get the cable end back into the securing clevis.

Last time this happened was on the dock in Sault Ste. Marie, several hours from home. Like many amateur-built aircraft mine also has other similar cable controls, including some for my gear retraction and rudder controls. After 12 years of fighting with this problem, I thought there must be a solution. The plan would be to trim the cable ends, and seal them with cyanoacrylate (crazy) glue and thread locker using some special “slippy” pliers that I made.

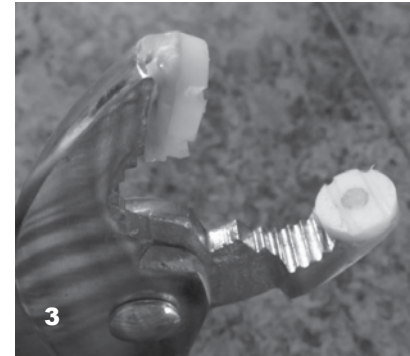
Step 1: Get a decent pair of cable cutters.\* These must be heavy duty and not just diagonal wire cutters. The cuts will fray very quickly if a semicircular blade is not used. I just received a German made Knipex (model 95-62-190) with integrated crimper. I saw these used on YouTube and I don’t regret the \$65. (\*Note: A rotary cut-off tool may also work for this task, but wearing safety glasses is a must!)

Step 2: Assuming that you’ve already damaged the wire, cut off the worst of the frayed portion with the good cutters without compromising the length of the cable.

Step 3: Make a PTFE jawed set of cable pliers. PTFE (Teflon) has low abrasion resistance and most types of glue won’t stick to it. I obtained PTFE washers from the plumbing repair shelf and thoroughly cleaned both surfaces with that vile smelling PVC/ABS cleaner (Cleaner 33). I roughed up the washers with a jeweler’s file and glued them to some spare pliers using good quality epoxy. While the epoxy was setting, I made sure the washers lined up by gently squeezing the jaws together. After curing, I drilled a 1/16” hole between the mating surfaces of the washers, making a groove, on both surfaces. I used a jeweler’s file to fine tune the groove size.

Step 4: Clean the cable end with a very good degreaser. I used what I had at arm’s length, so the PVC/ABS cleaner got used again to clean off any oils and dirt. Carb cleaner has also been suggested.

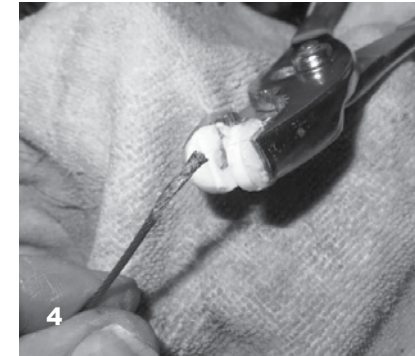
Step 5: Carefully apply cyanoacrylate glue to the last half inch of the cable. Use the PTFE-jawed pliers to squeeze from the dry cable towards the wet end, twisting to restore the weave as you pull. Try to flood the cable end with glue but not too much. Pull the cable through a number of times, twisting with the rope weave



as you go. Don’t leave it too long in one position as it may stick to the tool.


Step 6: Carefully apply Loctite Permanent Thread locker and work it into cable end using the pliers. Keep pulling the cable through the pliers until it is smooth.

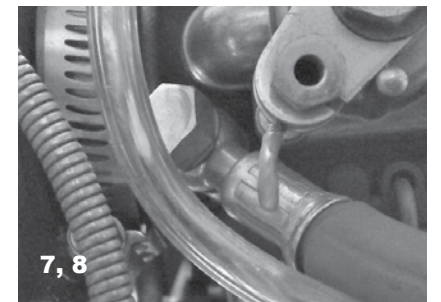
Step 7: Trim off any excess wire with the cutters. Apply more Loctite as necessary to achieve a smooth surface, without increasing the overall size too much, which could prevent you from



being able to insert the cable into the hole in the clevis or clamping nut.

Step 8: Once the cable has been inserted through the clevis or clamp on your carburetor apply a short length of heat shrink to seal the deal, keeping out moisture and debris as well as holding the cable in a nice tight bundle.

This should make future removal and installation of the cables a lot less problematic and make the installation look a lot more professional too. 



Lee Coulman is the Director of Flight Safety for the KW/RAA chapter.

## President’s Message / cont’d from page 2

aircraft. Ultralights are not currently required to carry an ELT in Canada.

### FAA-Proposed Cherokee Spar Inspection

There have long been issues about the wing spars of PA-28 and PA-32 aircraft, and the recent loss of a wing by an Embry-Riddle PA-28 appears to have accelerated the concern. The FAA is proposing to require an eddy current inspection of the lower spar cap bolt holes of aircraft that have accumulated 5000 hours or which have been subject to heavy load service. There are more than 1000 PA-28’s in Canada and the cost for a spar replacement could reduce the value of an affected plane


to a low number.

In Canada we have the Owner Maintenance category that allows the owner-pilot of an aircraft to perform his own maintenance and to sign for it. An aircraft must be in annual, meet its type certificate, and have complied with all AD’s. If an owner put his plane into O-M before the effective date of the proposed AD he could dismantle his wings and replace the spar(s) himself. There are some twenty-five PA-28’s already registered as O-M but no PA-32’s. The O-M category is for simple aircraft with fixed props and fixed gear and the PA-32 does not qualify.

Cherokees that fail the proposed test and which cannot be economically repaired would become a source

of engines, engine cores, and airframe parts. For those willing to build new wings, the fuselage could become the basis of an Amateur aircraft.

### Cost of Wheels and Brakes

Have you looked at the price of Cleveland wheels and brakes lately? A twenty year old Spruce catalogue shows the homebuilder’s set of brakes, wheels, tires, and master cylinders at under \$800 US. The current Canadian dollar price is some \$7000. Many other manufacturers appear to have used the same multiplier and now the cost of wheels and brakes can represent as much as the cost of materials for an airframe. A “project on gear” can double in value if it can roll. 



# 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 n.rioux1@videtron.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@sympatico.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 250-309-4171 email: Outintheair@yahoo.ca  
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 Alex Mackay mackay@physics.ubc.ca. 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  
  

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



# Classifieds

*To submit or delete a classified ad, please send to [raa@raa.ca](mailto:raa@raa.ca) and place "RAA ad" in the subject line.*

The Recreational Flyer is pleased to offer you colour advertising within the magazine. Previously limited to the back cover, we have added 4 new colour pages which will be available with limited space for your advertising needs. Our rates for both black and white and colour ads remain very competitive and you reach a captive and qualified audience. Emails can be sent to President Gary Wolf at [garywolf@rogers.com](mailto:garywolf@rogers.com) and George Gregory at [gregdesign@telus.net](mailto:gregdesign@telus.net)

Deadline for submissions is the first of the month preceding date of issue.

Artwork: Rates apply to camera ready artwork. Digital files are preferred and should be sent as email and in .txt format, PDF, JPEG, MS WORD, Photoshop or other common file types. Advertising is payable prior to printing of magazine unless other arrangements have been made. Payment is in Canadian funds. 10% Discount applies to one year (6 issues) insertion paid in advance. Commercial Classified ad rates 1/8 page minimum.

Advertising Policy: The Recreational Flyer Publisher reserves the right to refuse any or all advertising for any reason stated or unstated.

The Recreational Aircraft Association Canada does not assume responsibility for advertisements, but does exercise care to restrict advertising to responsible, reliable individuals.

Please note: Ads running more than 3 issues must be renewed to guarantee continued display in the magazine.

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

Recreational Flyer Magazine

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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 vehicles, 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 [mtytit@start.ca](mailto:mtytit@start.ca)

BASIC ULTRALIGHT PROJECT for sale, all metal low wing tail wheel, not regis-tered. 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](mailto: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 air-craft with folding wings. FREE to someone who will finish the project.
2. Brand new unused Fleet Canuck fuse-lage on gear, registered with MD-RA
3. Another Canuck fuselage with data plate and logbook
4. Lycoming O-320 E2D engine
5. New panel instruments in their boxes, plus a supply of AN hardware

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

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](mailto:bill.clifford@hotmail.com)

AVIATION HEADSETS, 2 Pilot, 2 Flight-com, \$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

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](mailto: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](mailto:gmlfebvre@outlook.com)

1946 PIPER PA-12, rebuilt as Owner Main-tenance 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](mailto:gmlerfebvre@outlook.com)

WANTED - LYCOMING 360 running engine or core for rebuilding, will consider carbureted or injected. [bwelfred@rogers.com](mailto: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](mailto:tisr@golden.net)

AVIAT HUSKY PROJECT. Salvaged fuse-lage 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](mailto:tisr@golden.net)

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

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](mailto:pjohnson@kmts.ca).



Zenith 250 TW Lycoming0320 160Hp TTAF 870 870 SMOH valcom 760 Transponder Propeller is sensenich aluminum, fuel 41 gals US with tip tanks, Radio is Valcom 760 ch. overall condition 7/10 20,000 CDN Dollars or best offer Wally (705) 328 1724

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,

Partial kit for Zenair CH 640 See my Face-book photo album for progress (George Lowes). I've lost my medical. See Zenair web page for specs. <http://www.zenair640.info/standard-ch-640-kits.html>

Kits List Price in \$US: Rudder Tail 590.00,

Tail (Manual Trim) 1,995.00, Wings 7,995.00, Fuel System 1,495.00, Extended Range Auxiliary Fuel Tanks 2 X 46 USgal 900.00, Nav/Strobe/Position Lights (Incandescent NOT LED) 828.00. Total List Price 13,803.00 \$US. Many air tools are also available. \$10,000 OBO. George Lowes 705-843-0826

FOR SALE: 2 Vintage Aircraft: Looking for an amazing aviation project or two?

1946 Aeronca Champ CF-GIA mostly flown by little old lady on Sundays... seriously...Fuselage needs to be covered-have sleeve and head liner-rest of airframe ready for new paint if desired TTAF 1831.4 hours. Total Engine Time since overhaul 2.0 hours. Owner maintenance category.

1946 Aeronca Champ CF-DBK, new fabric and paint, needs struts, control cables and windshield installed (have windshield). TTAF: 4731.0, 0 time overhauled engine

Owner maintenance category.

All logbooks and records intact ASKING: \$12 500 each, \$23 000 for both. Please con-tact Donna Loretto at [flightnote@hotmail.com](mailto:flightnote@hotmail.com) or call 613-675-2301

BX-1000 Black Max brakes, wheels and tires. 6 inches, axles 5/8" Brand new. 575.00 OBO. [Lmistor@hotmail.com](mailto:Lmistor@hotmail.com) 289 838-9588, 905 469-2198

Vans RV-6A with 160 HP 0-320 engine build

by Reliable Horsepower about 350 hrs. on plane and engine, prop. Dual brakes, Alti-tude hold, Electric flaps, Dynon DEK 180 4 cyl head, 4 egt., electronic 6 pack, amps, volts , oil temp, pressure, time , timers, g meter, fuel, fuel pressure, etc. etc. Narco Solid state transponder, mode C - AT165 TSO, Avmap EKP IV, ICom Radio - CI A210 flip, flop.

Mechanical air speed, also121.5 elt, Metal prop, Tip up canopy, Strokes on wings tips. No paint. This plane flies well and has full logs. Asking \$55,000 CDN. All parts were new at time of build. Don Kingsley 519 372 1383 [we3kingers@yahoo.ca](mailto:we3kingers@yahoo.ca)

Maranda Amateur Built for sale. I lost my medical and can't fly. Last flew in June 2018. Yearly inspection has not been renewed. Just disassembled first week of Sept and stored in building. Flew average 20 to 25 hours yearly and was kept in a hanger. Low time on Leavens rebuilt engine and metal seaplane propeller. Asking \$12000 OBO to set up a viewing or info please call 705-941-8033 or email [billdonig@hotmail.com](mailto:billdonig@hotmail.com)

*Ads run for a maximum three issues depending on space available and then must be renewed for continued display. Please direct all clas-sified inquiries and ad cancellations to: [garywolf@rogers.com](mailto:garywolf@rogers.com) and place "RAA ad" in the subject line.*

## Support Canadian Sport Flying

*The Recreational Flyer is only as good as the content supplied to us.*

*We rely on the input from members who are willing to share their expertise, stories, completed projects and what their chapters are doing.*

*Contact George Gregory at [gregdesign@telus.net](mailto:gregdesign@telus.net) or Gary Wolf at [garywolf@rogers.com](mailto:garywolf@rogers.com).*

***Send your contributions in today!***

**KW-RAA**

At the November meeting, Wayne Hadath drew a large crowd to talk about air racing. Wayne advised us that any airplane type can race including certified, homebuilt, warbirds, and even ultralights. He told us about the structure of the races, how points are awarded, race fees, costs and discounts, and how to maximize aircraft performance. Of course, knowing the safety rules for the race and having personal limits that you follow religiously are paramount.

On November 30th, the population of Heidelberg swelled by almost 40 people for a few hours as we celebrated the KWRAA Christmas Party. Members enjoyed a great home-style meal of ribs, chicken and roast beef and all the trimmings. As usual, pictures and videos played on a screen in the background



showing some of the adventures our members had this past year.

After the meal, the Holy Golly Award was presented to Roger Deming for stepping up as a fly-in host by not only allowing the use of his airstrip, but also going out of his way to accommodate attendees at the fly-in. Roger's development of his strip to allow more

amateur built and ultralight aircraft to operate there was another contributing factor in his selection for the award. Congratulations Roger!

The Larry Edwards Award went to Ed Welfred for his ongoing support of chapter activities including his assistance to other pilots at Aviation Fun Day at Waterloo Region International

## The Corben Baby Ace & Super Ace By Don Hatch

Shortly after joining the London/St. Thomas Chapter of the RAA in the early 1990s, I had occasion to visit one of the annual September fly-ins held by the Tiger Boys at the Guelph Air Park. There parked on the flight line with many other air craft, was Chapter member Ken Rutledge's Corben Baby Ace. I subsequently learned that the plans for building a Baby Ace were first offered for sale in 1929, the first plans ever offered for constructing a home-built aircraft. (The Pietenpol was not far behind). The Baby Ace is a single place aircraft with a parasol wing.

Very recently I had another occasion to visit the Guelph Air Park and have a chat with Tom Dietrich, the founder of the Tiger Boys restoration group. They have restored many Tiger Moths as well as numerous other vintage aircraft. Tom and a couple of others were busy restoring an Aeronca Champ. In the same hanger was another aircraft that I could not identify. Turned out it was a Corben Super Ace designed in 1935 to be powered by a Model A automobile engine. A picture of this rare airplane, with an upright Model A engine is shown below. Tom, sitting on the right, says the engine develops 55 HP.

Now back to the Baby Ace. The first Baby Ace to be built in Canada after WWII was constructed by Gus Chisolm in Goderich Ontario in 1958. This baby Ace was the second post-war amateur-built airplane constructed Canada. (The first was a Stitts Fly Baby built by Keith (Hoppy) Hopkins, also at Goderich). Gus Chisolm's Baby Ace is called Bits'N Pieces and would you believe, it is now in a Tiger Boys hangar at the Guelph Air Park along with a single place Jodel D-9 and a magnificent 5/8th scale Hawker Hurricane replica.

The Tiger Boys are a friendly group and are always ready to welcome visitors, especially those interested in vintage airplanes.



## Across Canada RAA Chapters in Action

Airport for several years, his presentation on his Bearhawk project, his assistance with Gary Wolf's metalworking presentation and his unwavering attendance at chapter meetings. Unfortunately, Ed was unable to attend the Christmas Party, so I accepted it on his behalf and delivered it to him.

Besides our members and spouses, we had a number of invited guests at the party, including Susan Comber and Tim Dault, the owners of the Glendale Aerodrome at Williams Lake near Chatsworth, Ontario. Sue and Tim have been gracious hosts whenever Lee and I fly up that way and even assisted with some emergency repairs on my Highlander a while ago. Sue and Tim advised me that they enjoyed meeting our members and celebrating with us and hope that more of our members might be able to fly up there for a visit in 2019.

Also during the evening, we showed a number of photos of Gunter Malich, who passed away earlier this year, and his Vans RV8 aircraft as well as the CriCri that he built when he lived in Vancouver. During that short presentation we held a two minute silence in remembrance of Gunter, his friendship and his contribution as a director and fellow member of KWRAA.

As usual, we had a 50/50 draw after dinner and drew door prizes until everyone received something to take home. Whether it was an aviation book, a chocolate treat, a decoration, a tool or flashlight, or something else, thanks to everyone who brought door prizes, no one left empty handed!



Thanks also to Pauline Copelston, who provided a number of excellent books from Gunter Malich's personal collection.

After the presentation and draws, there was plenty of time for visiting and viewing of photos and videos before heading home after a great evening of good company, good food, and good fun!

We look forward to having you join us for the 2019 KWRAA Christmas Party on the last Saturday of November!

### Midland - Huronia

Leigh R reported on the recent and very interesting group excursion to Toronto to tour the Nav Canada ATC centre and their training facilities for Tower Controllers in the same building. We also visited the maintenance hangar belonging to the Glencore corporation who own Raglan Mining. We inspected one of the two modified Boeing 737s in

which they to fly freight and personnel into and out-of the Raglan nickel mines in northern Quebec. If you missed this event, you missed a good day.

The CH-601 Builders group continue to meet Thursday evenings and Saturday mornings in Bob's hangar.

### RAA London-St Thomas

Gary Bishop is nearly ready to start the engine on his Wagabond.

Serge LaVoie is working on the interior of his Super Cub.

Denny Knott's Whitman Tailwind is for sale.

The presentation was given by Dave Hertner. Recently appointed the North American Distributor for the Belgian designed and manufactured D-Motors, Dave brought along two engines for display at the meeting; the 90hp 2700cc 4cyl LF26 and the 125hp 3900cc 6cyl LF39 models. Both engines are designed from the start as aircraft engines.



They feature flathead architecture, liquid cooling, dry sump, fuel injection, full FADEC electronic engine management, and Nikasil cylinders. They can be set up in tractor, pusher or helicopter configurations. Advantages of the flathead design are a flat torque curve, direct drive (2800 rpm cruise), simplicity, light weight and a compact frontal area (about 24 inches). Minus propeller, battery and engine mount, the installed weights including liquids are: 62kg and 85kg (136.4 lbs. and 187 lbs.).

There are now about 50 installations flying in Europe, and the LF39 is now certified in Europe in the Microlight category. EDM Aerotec is using the LF39 in its CoAX2 helicopter, having chosen it over the Rotax. One engine has accumulated about 900 service hours, was disassembled and inspected and showed no visible wear. An initial TBO will probably be set at 1500 hours as experience dictates.

All engine orders for the North American market plus overflow orders from other distributors worldwide will be assembled and tested in Dave's Dorchester, ON factory building. He has acquired the space next to his Fisher Flying Products operation and will be running two assembly lines and an engine test area. Each engine will be built by one person, but quality checked, and dyno tested by a different individual.

An advantage of electronic engine controls is that many service diagnostics can be done remotely from Dorchester. Engines that require actual disassembly will shipped back to Dorchester.


#### Chapter 85 Vancouver

The Cruiser is fast approaching the finish line. Fuel flow tests and

finalizing the flight display are amongst the tasks at hand; a maiden flight is expected very soon. Chapter 85 had their AGM in October, and elected a new executive. Thanks especially to Peter Whittaker for 4 years of faithful service, and to all the others who have served their aviation community.

November saw Remembrance

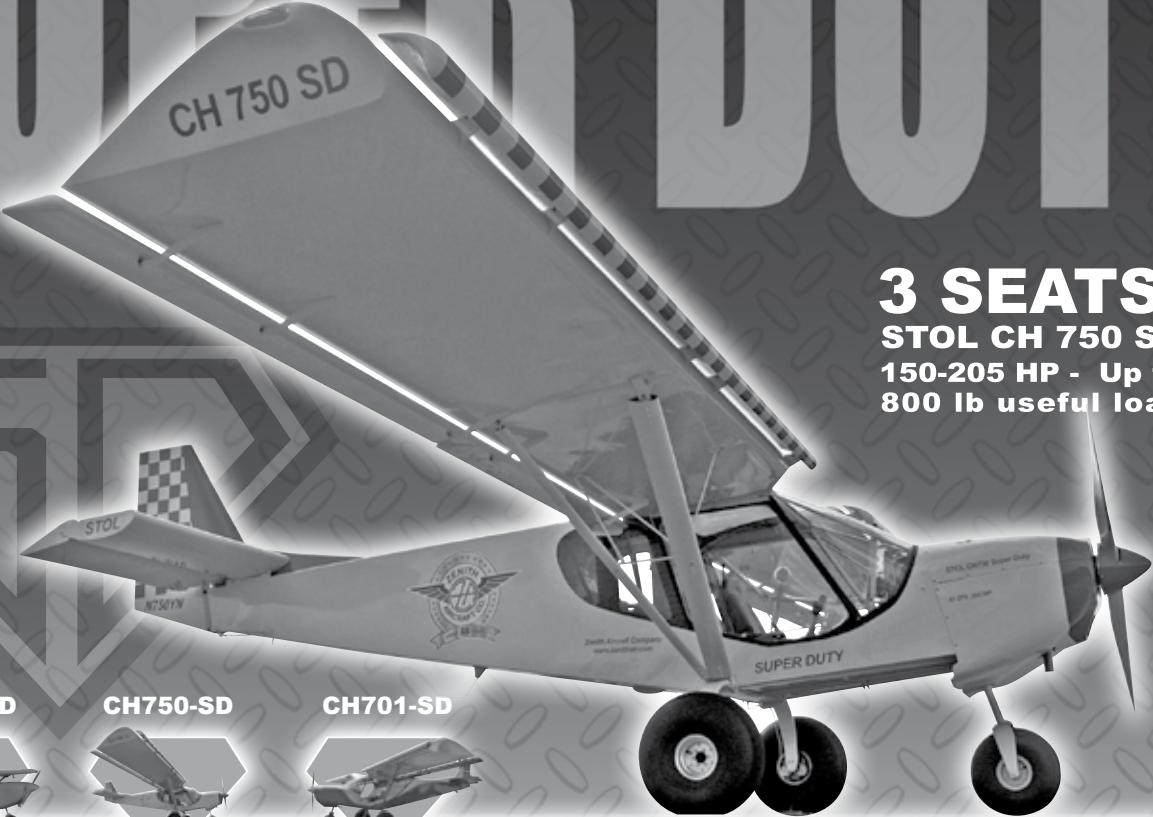
Day observances at DHAP, again organized by member John Macready. John stated that this is the 15th year that this has taken place at Delta Heritage Airpark. The weather cooperated with sunny, calm and cool conditions.

Chapter 85 had their Christmas get-together in the clubhouse the first Tuesday of the month, in place of their usual chapter meeting. 


*Pictures from Chapter 85's Remembrance Ceremonies: top, Lt. Tim Novak (third from left, back row) brought a contingent from 655 Squadron, RCAC to the ceremonies. Bottom, veteran Harry Hardy presented the Veterans' Wreath.*




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