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Recreational Flyer

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The Voice of Canadian Amateur Aircraft Builders $6.95

Flying on a Budget: the
Texas Parasol

RAA
RECREATIONAL AIRCRAFT ASSOCIATION
RÉSEAU AÉRONEFS AMATEUR CANADA

From The President's Desk

Gary Wolf

AULA INSPECTIONS

The manufacturer of an AULA assumes responsibility for the integrity of the aircraft and its conformity with the required design standard, and he indicates that he accepts a finished aircraft by signing a document that is required for its registration. Some manufacturers issue the document without any inspection, some want photographs of certain sections of the plane, and some supply their own delegate do a final inspection.

Recently Zenith has begun requiring that the builder of an AULA must first register with MD-RA and then pass their precover inspection. This requirement is a first for manufacturers in this category and it is to be applauded. When the AULA category was first set up the intent was that MD-RA would inspect each plane for integrity of construction and conformity with the type definition. Now each AULA Zenith will have the assurance that the unseen areas have been properly inspected, and of course Zenith is still responsible for affirming conformity with the type definition.

One might well ask, if the plane meets the precover requirements, why not just continue with MD-RA, register as Amateur-Built, and have the benefits of this category? These include greater gross weight and the ability to make your own replacement or modification parts without having to seek written approval from the manufacturer. Float installations can be illegal for some AULA's if they push up the empty weight of the plane too high. The category limit is 1232 pounds whether on wheels or floats, and there is no float allowance above that number. If heavy amphib floats on an AULA result in an overweight and illegal plane, the only recourse is to remove them. In the Amateur category the owner can apply for an increase in gross weight.

WEIGHT AND BALANCE / ELEVATOR TRIM

It always strikes me as amazing when owners of ultralights espouse that they do not have to do a weight and balance because the regulations do not require this for registration. When I have asked Transport to require W&B as a condition of registration, the quick response has been that of course no sane pilot would fly without knowing where the CG is. I once took some flight training in an early Beaver UL, a plane that frequently exhibits a propensity to head downwards if the pilot lets go of the stick. The instructor's solution was a bungee cord from the seat to the stick, just ducky until the elevator cable breaks.

Challenger owners seem to rely on a simple indicator of where the CG is not. The main gear wheels are at the rear CG limit, and an empty Challenger sits on its tail with the nosewheel in the air. When the crew gets into the plane, if the nose comes down this is taken as the indication that the CG is ahead of the rear limit. The problem is that there is nothing to indicate if it is ahead of

continued on page 35

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features

columns

George Gregory

A beautiful Globe Swift at the 2010 Arlington WA Fly-in.
On the cover: Burt Parson's and Don Morrow's Texas Parasols.


C-FRGV

THURSDAY, JULY 5 2012

There I was, Kamloops, early-ish morning, another brilliant flying day ahead. The airport administrator said it wouldn't be cost effective to bill me for my overnight tie down, so I was off. Well, not quite. I wanted fuel. I know I've mentioned my fuel fetish before. I just find flying so much more fun when I don't have to worry about running short. I called the FBO on the designated frequency, no response. Checked the frequency. Correct. Checked the CFS, tried the phone number. Recorded message. They don't open till 9AM, but will come out for an exorbitant callout fee. After some re-calculating I decided I had enough to make Hope.

At least I hoped so.

Above: looking north up the Fraser Canyon; Below, looking down on the Fraser River near Hope.

IT WAS A GORGEOUS MORNING, cool, clear, windless, no turbulence and not much traffic. Flying down the Thompson Valley I radioed my position often, and cut the corners where visibility allowed. I do worry about fuel, you know. When I reached the canyon, the Fraser was running hard. It is obvious there is no place to land if the engine quit. I considered the options:

The river would be possible but even with the floats, the plane would be smashed to smithereens in the rapids even if I managed to land safely. Drowning? Don't worry about that... I'd die of hypothermia first.

The road has a few straight-ish sections, but most of them have Hydro wires diagonally across them. And even if I got it down on the road, I'd probably get creamed by an 18 wheeler because there is no shoulder for them to pull off on.

But wait, my engine was still going! No need to decide just yet. Just sit back, enjoy the scenery, and keep an eye on those temps and pressures.

By the time I reached Hope, I was still showing sufficient gas to make Chilliwack, so on I flew into the broadening Fraser Valley. The terrain is beautiful in a much less dramatic and threatening way. To the north I could see the lower end of Harrison Lake and then to the south of the river, Chilliwack.

About halfway through re-fueling, a friendly voice chirped up from behind, "Nice Rebel!" I was inclined to agree, but managed to say something self-effacing. So I met Abe, an old Rebel guy who had a good look through my plane, then took me over to show me his own plane, also a nice Rebel. The floats looked a bit short, but he manages. And since we were in Chilliwack, we then went for pie, a-la-mode.

Above: another view of Harrison Lake. Below, Looking west. Beyond lies the Fraser Valley and the Greater Vancouver area. Bottom, Thomas Lake, still frozen.

After the pie (which was completely up to its reputation) it was then a short hop to my destination, Langley, BC. Langley's friendly and tolerant controllers guided me through my somewhat disoriented approach to the airport where my friend Walter Klatt keeps his own amphib Rebel. Since then Walter has been demonstrating the finer points of alpine lake flying and providing hospitality beyond compare. No sooner was F-RGV tied down than Walter announced we are flying up to his cabin at Harrison Lake. Ok, I love to fly. We hopped into his plane and headed up to his cabin to do a few chores.

Walter's plane is essentially the same as mine except he has upgraded his engine to an 0-360 and gets 30 HP more. The performance difference is amazing. He climbs faster, cruises faster and uses less fuel. I started thinking about how many extra weekends I'd have to work to afford such an upgrade.

At the cabin, I did my best to help, but Walter has most tasks organized to be done by one…him, so I spent a certain amount of time feeling useless.

We flew a roundabout route to get back to Langley, so we could see if Thomas Lake had thawed yet. More spectacular scenery leapt out from every direction, but alas, Thomas was still frozen.

Back at Langley the planes were put to bed and we undertook the enviable three minute drive to Walter and Ruth's house. Eating dinner, we had a view of the airport and could see who was in the circuit from the table. Walter has achieved a very nice setup. **R**

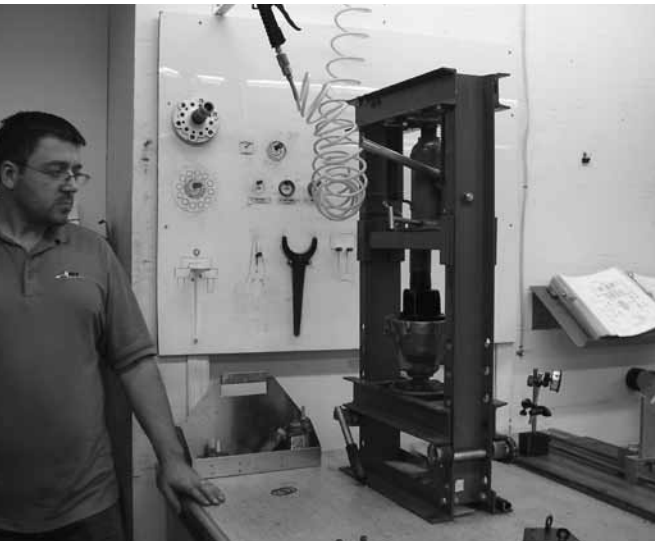
The Care and Feeding of Your Rotax

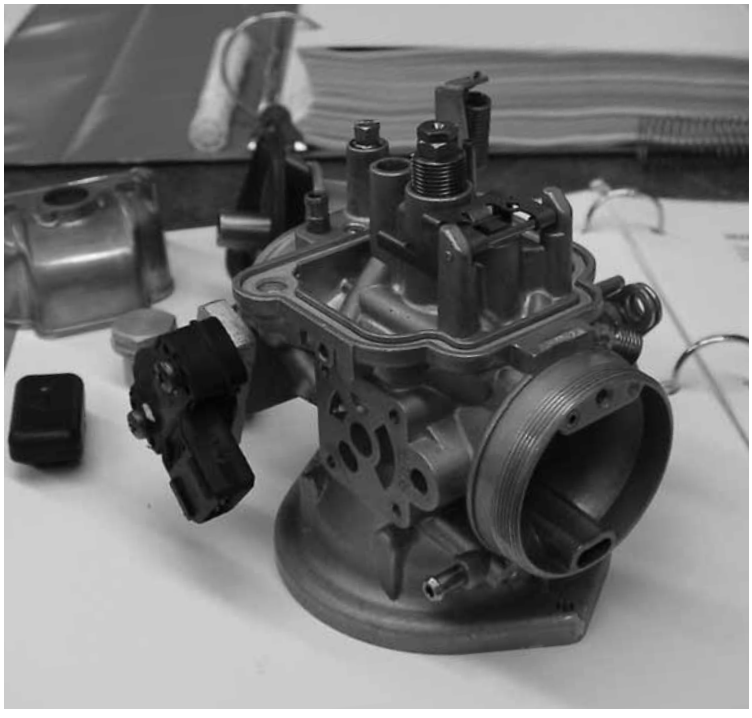
Chris Staines

I RECENTLY HAD the opportunity to enrol in the Rotax maintenance course for four cycle engines at the Rotech Research facility in the beautiful town of Vernon, British Columbia, nestled in the picturesque Okanagan valley. This was a three day 'hands on' course with a mix of classroom, repair shop and airport ramp time in a Europa behind a sometimes rough running Rotax 914 engine. The classes started at eight in the morning and were scheduled to end by five, but that sometimes stretched to six or a little later. To make sure participants were engaged there was an open book exam that we were requested to hand in before finishing the program, though that was optional.

The course was taught by two instructors who were not only very knowledgeable about the intricacies of the Rotax 900 series engines, but also had the ability to convey the information in a succinct and lucid manner with the help of great visuals, a well organised workbook and lots of actual assemblies and parts from the engine. After two and a half days of systems review we progressed to troubleshooting, with time split between the Rotax 914 powered Europa that never seemed to be running well (it had always "just come out of maintenance" was the story we often were told) and troubleshooting scenarios in our workbook, while the Europa was 'fixed' for our next session with it. The ingenuity of instructors Rob Seaton and Michael McLaughlin in taking classroom knowledge and then applying it to common maintenance problems was very well thought out, and from my perspective a highlight of the course.

It is not possible to convey in a brief article all the lessons learned in three days of fairly intense instruction, but I will review some of the most salient lessons for Rotax 900 series owners and potential users of these beautifully engineered and constructed engines. They are not more difficult to maintain but they are very different in the maintenance procedures required versus the traditional Lycoming and Continental engines.





It is fair to say that an AME without training specific to these Rotax engines should not work on them.

It is fair to say that an AME without training specific to these Rotax engines should not work on them. A simple oil change done on a Rotax engine by an AME using the same careful techniques he would on a Lycoming or Continental machine has the potential to cause severe, expensive damage to a Rotax. Do not delegate maintenance procedures to someone without first reviewing their qualifications and ensuring they have the required training. The tight manufacturing tolerances that give these engines their quiet smoothness, so enjoyed in the flying community, are not amenable to some of the practices used by otherwise well qualified aircraft mechanics. The problems early operators like Diamond Aircraft experienced were largely due to a lack of correct maintenance procedures.

BALANCING OF THE CARBURETORS is important for trouble free operation of the engine. The vibration from poorly balanced carburetors will shorten the life of the gearbox and other components. Understanding how and when to do this procedure is a must for all Rotax engine operators and is not difficult to accomplish. The recurrent carburetor inspection, as required by the maintenance manual, is also a necessity, particularly when mogas is used.

The engine mounts, radiator airflow, propeller inertial mass and oil tank positioning are critical elements in a new homebuilt installation. On new designs these should be carefully reviewed to make sure they are within the limits specified in the installation manuals. The location of the carburetor's float bowl vent tube in the cowling is an especially important point. It is quite possible to have a satisfactory full power ground run with the 912 and 912s, only to have the engine stop on an initial flight climb because the vent tube is subject to suction due to airflow through the cowling, with a potentially deadly result.

These engines will tolerate avgas, but the maintenance requirements, oil type and ultimately the expense of the engine ownership are affected by the lead accumulation in the engine. Mogas is generally kinder to almost

Left to right: putting the gearbox together; your personal carburetor; our instructor discusses the intricacies of the Bing carburetor; Running up the 914 on the ramp

all areas except perhaps the rubber components.

Fuel tank materials need to be examined carefully. Metal tanks are probably the safest, but the use of epoxy glass fiber tanks is common and has to be approached with caution. Epoxy fibres from the tank can play havoc with the carburetors and the use of an extremely fine gascolator screen, such as is found in the Andair products is an excellent idea. Some gascolators have a slightly coarser screen which will allow very fine glass fibers to migrate through them.

The gearboxes of engines in seaplanes seem to have a shorter life than would be expected. This is due to the tendency to have a low idle and large, heavy prop on a seaplane. The minimum idle speed recommended by Rotax (1400) should be ignored where possible as idling at this low speed is hard on the gearbox and causes premature wear. If safe and sensible; try to keep the idle above 1800. If in a seaplane and approaching a dock in a plane with a fixed pitch propeller, a very low idle, down to 1400 RPM, is unavoidable and the only prudent course. Other than docking it is wise to keep the idle time below eighteen hundred rpm to a minimum.

HARD STARTING ISSUES may be due to insufficient rotational resistance in the torsional vibration damper system. The values for this can be easily checked at an annual and should be examined whenever starting seems to be problem. The procedure is well explained in the manual.

Many problems that on the surface seem to be ignition system problems are often really carburetion issues. Before taking the ignition system apart carefully inspect the carburetors for synchronization, correct mixture and wear, particularly if there has been a lot of vibration.

Having said all of the above it is important to realize that major problems are infrequent and that broken connecting rods, cracked cylinders and bent crankshafts are extremely rare in the Rotax 900 series engines. I know my Rotax 914 powered Europa has a turbine-like smoothness that I have never experienced behind traditional aero engines. The United States military has over a million hours of flight time on modified Rotax 914 engines at altitudes of up to fifty thousand feet.

The course cost is currently six hundred dollars for the three days and is well worth the expense for any Rotax owners who intend to care for the power plant hemselves . If you are buying one of these engines for a homebuilt installation it would be worthwhile to tack on the course cost as a necessary insurance payment for the safe and efficient operation of your new acquisition. The instruction you will receive will pay for itself many times, over the life of the engine.

My only regrets about this trip to Vernon, British Columbia are that I should have stayed for the two day heavy maintenance course at the same time and also allowed a few extra days to see the scenery of this very pretty valley area. Next time!

Surviving the...

Big Chill

BY JILL OAKES

EVER WONDERED WHAT YOU'D DO if you had a forced approach in winter...and weren't sure when help would come? Even when flying close to a highly populated area, it might be an uncomfortable night spent outdoors if pilot or passengers aren't ready for an unplanned winter camping trip. Every year the RAA, SFC, CASARA and University of Manitoba co-sponsor a winter survival course based on traditional Inuit techniques

of 'thriving' in cold environments rather than 'surviving'. This year twenty-seven hardy soles met with the hopes of building an igloo, or, due to the unseasonally warm weather and lack of snow on the Prairies, to at least get a first-hand view of how to cut and set a snow block. Leading up to the course date, Drs. Rick Riewe and Jill Oakes watched the few existing snow drifts shrink in the above normal temperatures, full sun, and lack of cloud cover. Then, miraculously, Thursday and Friday the temperatures dropped just enough to re-solidify the tiny bits of remaining snow drifts. Saturday morning, we tried cutting a few blocks and were really surprised to actually see the snow cooperating. Soon 27 enthusiastic folks were sawing blocks from whatever drift they could find. We piled the snow blocks onto a sled, harnessed some volunteers up to the

A good crowd showed up for the survival course. A last minute cold snap saved the weekend from unseasonably warm weather.

sled and pulled the blocks carefully over to one igloo building site. It was highly doubtful that we would get the 30 blocks needed to produce one igloo, however everyone would have a chance to at least learn how to set a block. Collecting blocks from different drifts located all over the airport, we slowly began acquiring enough blocks to build at least one igloo! Rick and Jill quickly began teaching the basic steps needed to get the igloo's foundation started, still not sure if the temperature would soon climb above seasonal norms and make completing the igloo impossible. Around 2:30, the temperatures climbed too high to set blocks, so we left the igloos half-finished, baking in the strong southern sun, and went off to experience some skijoring - dog pulled skiing. When we returned a couple of hours later the sun was setting, temperatures were beginning to drop again and everyone got a chance to become competent at setting blocks. We finished the first igloo with the gorgeous lighting of a spectacular winter sunset warming the sky. It was about 6:00. Instead of going in for supper, everyone decided to build a 2nd igloo and then a 3rd igloo as competency levels improved and temperatures dropped to a beautiful -30 again. To all of our surprise, under starlight, we completed 3 igloos!

SLEEPING IN THE IGLOOS on a bed of caribou skins was the ultimate highlight. Here are a few comments from some of the participants: "It was fabulous" " "...the igloo was the most exciting and the caribou skins were soooo warm!" "Loved everything about the weekend" "I was most excited about the igloo building. I learned so much!!!" "I had a great time building igloos and learning how to

Igloo building (and occupying) was a favourite activity. They can actually be quite snug,especially with a caribou skin. Great White North indeed!

build them. It was an experience I won't forget for sure!" "Sleeping in the igloo was cool, as were the Inuit games... building the igloos was fun too" "I can't believe I learned how to build an igloo! You can never get the experience of building an igloo unless you build it yourself."

KEEPING ONE'S MIND PRE-OCCUPIED is often a significant problem for folks "stuck" overnight in a snow drift. Participants were introduced to a few ideas of ways to keep themselves entertained and to turn an unplanned ordeal into another great winter camping trip. Suzie Strachan, President of Snow Motion, introduced us to the Nordic-based skijoring sport. Many participants had never seen this sport where the family dog actually pulls a skier along down the trail at quite a clip! This sport was first introduced to Manitoba about 15 years ago and it was enlightening to learn about the need for local parks to provide tracks that meet the needs of this relatively new sport. The dogs absolutely loved the chance to get out and run...great exercise for the dogs and the dog's owner! The Manitoba Trappers Association member, Richard LePage discussed the fur industry in Manitoba and demonstrated how to skin a beaver. Participants had a chance to actually try skinning a beaver, using ancient techniques passed down from one generation to the next, as well as learned about the different fur species available in Manitoba. The beaver carcass was butchered and absolutely everyone raved about how delicious it was - there was none left and about 2 gallons of vegetable stew left uneaten! Pilot Chuck Wilson and his team of Navigators and Spotters with Canadian Search and Rescue Association (CASARA) led an awesome mirror signalling exercise. They were able to talk to us on an air-to-ground radio so we knew exactly which individuals truly were able to work the mirror signals effectively, which gave the others feedback needed for them to readjust their technique until everyone caught on. Pilot Wilson said the half dozen mirrors looked like a police car all lit up or strop lights. One of the spotters took aerial photos so the participants could actually see for themselves the signals they were sending to the search aircraft. Many participants remarked "the mirror exercise was probably the most useful skill I've learned" and "this is a skill I'll never forget"...guess that is truly a life-long learning in the making.

This course is sponsored by the University of Manitoba, the Recreational Aircraft Association (RAA), CASARA and Springfield Flying Club. If you're interested in registering for January or February 2013, email jill_oakes@umanitoba.ca and pray for a few snow drifts and a bit of cold weather. You too will have the pleasure of camping without mosquitoes!

Australian Pilot to fuel record attempt on Plastic Garbage

An Australian group, the @Altitude Team is working with Irish company Cynar Plc to fly an airplane on fuel derived entirely from non-recyclable plastic taken from the Pacific Ocean. The group's pilot, Jeremy Rowsell, plans to fly from Sydney, Australia, to London in early 2013, retracing the flight path of pioneers Charles Kingsford-Smith, Amy Johnson and Bert Hinkler. Two records are in their sights:

- To be the first to fly via plastic waste fuel at 100% treatment; and

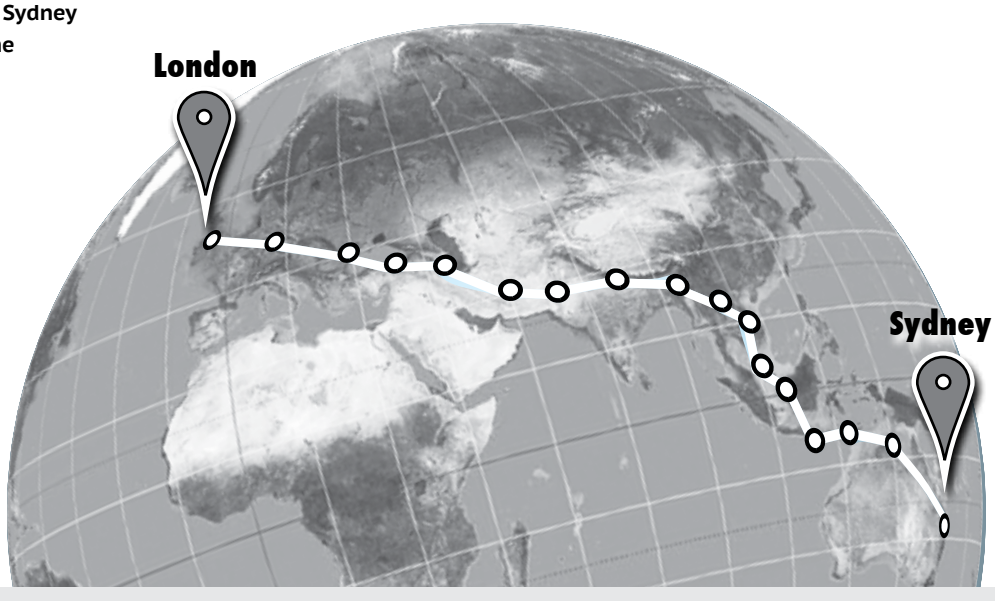
- To break a flight time from Sydney to London for a single engine piston plane.

End-of-life plastics that can't be recycled would otherwise go to landfill or wind up in the oceans, swirling about in the the numerous gyres known as the great garbage patches or trash vortex. The largest of these is the Great Pacific Garbage Patch, a mire of plastic waste that covers an amazing 15 million square kilometres. Cynar's unique technology converts mixed non-recyclable plastic waste into synthetic fuels that are cleaner, low in sulphur and (in the case of the diesel) burn better than generic diesel fuel.

The plastics are heated in an oxygen-free environment they can't burn (so no toxic emissions), which breaks them down into the component hydrocarbons to create the equivalent of a petroleum distillate. This can then be separated into different fuels.

The carbon footprint of the process is far smaller than traditional fuel production, and the fact that the plastics are taken from waste management companies and the diversion of plastics are diverted from landfills is also environmentally friendly.

While technically elegant, it's never been demonstrated like this. To demonstrate feasibility and to raise consciousness, this is a pretty neat idea. Besides, if people can make money saving the environment, who knows where this could go?



Is Toronto Being Bypassed by the 'Aerial Highway'?

By Chris Staines as printed in the Toronto Star – Aug. 1st, 2012

Business jet rental company, NetJets, owned by Warren Buffett recently signed an agreement to purchase up to 425 new business jets for 9.6 billion dollars, the bulk of the order going to Bombardier. The passengers in these jets and the tens of thousands of other general aviation aircraft in North America include executives, government leaders and celebrities, to name a few groups with the means to use this convenient and quick form of transportation.

Whereas settlements were once dependent on oceans and rivers, followed by railroads and highways for transportation, today people going long distances travel by air. Air travel, while still expensive has, along with electronic media, created our global village and a better understanding and empathy for peoples all over the world, enhancing world peace in the process. It is hard to imagine our world without it.

Early travelers used public transit to get to their destinations as only the wealthy could travel in the comfort of an automobile with the privacy and scheduling convenience that cars afforded. Increased prosperity brought car leasing or ownership to most North Americans.

continued on page 34

Lighter Than AIR

RAA and Lyncrest Airport Neighbours visit Canada's only airship - and it's a homebuilt.

By Jill Oakes

Dr. Barry Prentice and Dale George presented the only air ship in Canada to the Recreational Aircraft Association (RAA), aviation enthusiasts, and Lyncrest Neighbours! Barry and Dale explained what's the difference between a blimp, a dirigible, and an air ship? Nothing. They are all non-rigid lighter than air vessels; whereas the *zeppelin* has a frame.

The air ship bag weighs about 400 pounds, is about 80 feet long, and can carry about two people. Like an ocean-going ship, the larger the air ship is it can carry and exponentially greater load. To carry 5 people, one needs about 140' bag or envelope.

Dale and Barry inflated their air ship for our tour. Dale actually built it using about 500 yards of 56" wide fabric and about two dozen helpers. The seams are sewn with a standard sewing machine and sealed with heat and glue to prevent leakage. The fabric is very strong, gas tight, and has a UV stabilant on the outside. The fabric weighs 10 ounces per square yard, so it's not light. Dale plans to experiment with light weight aircraft grade aluminium as a substitute for fabric. The envelope is actually two bags, one inside the other.

The bag is filled with helium; however helium is currently being rationed so Dale and Barry are experimenting with hydrogen. Next door the New

r Bus manufacturers are soon to release a hydrogen powered bus, Dale and Barry expect to follow similar safety practices to use hydrogen for their air ship. They plan to begin testing with remote controlled, unmanned air ships.

How does one learn to fly an air ship? Dale learned by actually buying a $2.5M dollar machine and learning to fly it in the USA. After about 20 hours of training he was flying solo! Some of the surprise features included on C-IJOR are:

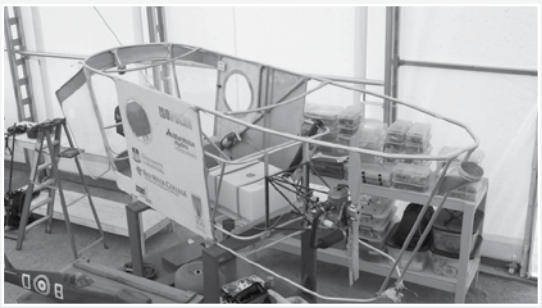
- It doesn't stall! Even at a 80 degree angle climb, impossible to stall
- Because the cockpit is in the centre of the air ship, when instruments indicate the machine is 1/2 degree off straight and level, the nose might be as much as 50 feet high or low!
- The air ship 'sails' through the air rather than bouncing around like fixed wing aircraft in turbulence.
- When placed into a steep dive, it doesn't speed up if it encounters cool air.
- An engine failure is uneventful as the air ship will hover for hours. One can shut engines off, let a passenger out on a rope ladder, and then help them back up the ladder an hour later without landing!

A larger air ship, 140' long, is currently having its fins recovered with Polyfiber aircraft fabric. Once recovered, the pieces will be tied into position using specially designed knots and fine rope! The fabric is glued, taped, and ironed. No rib stitching is used. Dale said, air ships are typically painted with rollers on the end of broom handles!

It was fascinating to see how the air ship components were assembled, and numerous RAA members agreed it would be really interesting and fun to help restore a few of the pieces in a work party. AME's have agreed to supervise the work. Dale and Barry will provide all the materials, gas to cover volunteer's travel costs, plus rides in the air ship once it is finished!! On a stormy winter Saturday, guess where you'll find a group of aircraft builders keen to try their skills on recovering an air ship fin!

If you're interested in joining Jim Oke's team of volunteers, contact jill_oakes@umanitoba.ca with information on when you are available.

Below, left to right: The bag arrives at the hangar. A tarp is laid down first (wouldn't want to rip the balloon...) and it's then unrolled on the hangar floor. Blowers are used to inflate the balloon, which will eventually be filled with hydrogen. The bag starts to inflate; and right, where the pilot and passenger get to sit. Photos courtesy Dr. Barry Prentice.



After the Crash

You've survived. Now what? / by Barry Meek

"POLICE HAVE NOT YET RELEASED the name of a 25 year old woman who died on a remote mountain following the crash of her light plane.The rental aircraft disappeared two weeks ago while the student pilot was on her first solo cross country flight. It was found about 60 miles off her intended course, in rugged terrain. Authorities speculate the pilot had survived the crash but succumbed to injuries, dehydration and hypothermia about four days later. The emergency locator transmitter was not activated."

This short news item could appear in any paper, anytime. At this point however, it's just fiction designed to stir awareness of your survival skills. The information in this article comes from personal observation and experience as a long time pilot and ambulance paramedic. So far, it's probably been a lot of good luck that's kept me out of serious trouble. But as they say, "learn from the experience of others. You'll never live long enough to make all the mistakes yourself." I try to live by that advice.

The AIP (now called the AIM, or Aeronautical Information Manual) states in effect, that the pilot must carry equipment sufficient for the survival of each person on board, considering the area, the season and anticipated weather. The very basics are a means to start a fire, provide shelter, obtain or purify water, and for visually signalling distress.

In simple terms, a tarp, matches, water bottle and signalling mirror would meet the regulations. But here's where it would be nice to have McGyvor along. Innovation and imagination would go a long way toward ensuring the survival of a downed pilot who is equipped with only the basics. In summer, at low elevations it may be fine. However, in winter or in mountainous terrain, things get a bit more complicated. Most pilots carry more than the regulations require. And it seems to me the more experienced the pilot, the more equipment he has on board. The four basics are a good start, but clearly they're not sufficient for anyone who gets more than a few miles from a major road or settlement.

I'll offer a comment on the first aid kit requirements for private aircraft. The CARS 602.60 state what must be in that kit, but only for commercial operators. Aircraft that are privately owned and operated carry whatever the owner is comfortable with. Quite frankly, the list of recommended items for private operators is extremely insufficient, and a waste of space. You can personalize your kit by first learning something about first aid, then use your imagination to anticipate injuries you're likely to see following a forced landing or a crash. Plan and pack appropriate items. It need not be a huge, well stocked trauma kit. A small knapsack would work quite well. It's a good size, and can quickly and easily be removed from a wrecked aircraft. If it's done right, your fire starter, water purification tablets or filter, a couple of space blankets and a signal mirror will fit too. There you go, both kits in one pack. But don't forget the survival and first aid books. Preferably, read them before you leave the ground.

There are no rules set in stone for survival. Nor is there a right or wrong procedure for the administration of first aid. You do whatever works given the time and circumstances. I have yet to find a book that stresses principles over techniques. It's vital that you recognize what you need to accomplish, whether it's starting a fire, building a shelter or stopping someone's bleeding. Then you set about doing it, utilizing your experience, knowledge and common sense. We're all born with at least a bit of common sense. Knowledge can be found in a book, and hopefully the experience is something you won't ever obtain.

The last line of our fictitious news item mentions that the ELT was not activated. The student pilot apparently did a good job on her landing, or the device was faulty. Remember an ELT is installed horizontally in your aircraft, and is activated by a switch that moves along its longitudinal axis. From experience, I know it won't come alive by dropping it on it's flat surface. But if you strike one end with the palm of your hand, it doesn't take much force to set it off. It goes without saying that the ELT should be physically accessed following a crash and switched manually to the ON position. The student probably didn't know that yet.

You need not be a survival expert or paramedic to do the right things following a forced landing or a crash. Good flight planning should include planning for what's not supposed to happen. Think ahead to stay ahead. Be safe this winter.

Across Canada

RAA Chapters in Action

RAA Scarborough

Our thanks go out once again to Dave and Anne Austin for hosting our July and August BBQs at their home on Rouge Hills Drive with its wonderful view from the back yard over the Rouge River valley. These BBQs are clearly popular, and much appreciated by all who were able to attend.

Another vote of thanks goes to Nick and Karen Schwertfeger for stepping in to host a corn boil/BBQ on Saturday,

September 8th at their place on the south shore of Lake Simcoe. They cooked a BBQ'd lamb, no less About 15 people attended. It was very kind of Nick and Karen to do this at the time when Wally and Sandy Norris were away travelling.

At our September meeting, we saw a couple of excellent videos. The first involved the flight of the Vickers Vimy replica from Britain to Australia. A second one gave details of the Mosquito fighter/bomber.

RAA Ottawa - Rideau

The August meeting was held at the Kars RAA club house. Our President Victor Thompson brought the meeting to order at 8:pm. A letter of appreciation was sent to Vintage Wings for their help with marshaling at the BBQ. Anne Barr offered a base radio to the club for events and it was accepted with appreciation . Discussions followed re the Zenair Zodiac crash at Carp. Suggestion was made to assemble of a CRASH KIT to grab for future incidents. Points of interest concerning the Club House - furnace installation . Ulrich is to be contacted concerning a presentation on the COMMONWEALTH YELLOW WINGS TOUR.

The September meeting was held at the Kars RAA club house. Present were:. Our summer BBQ lunch has been scheduled for July 14, 2013. Club plans to hold a work bee to create signs for advertising our events. Ron J is looking into prices for an excursion (bus/hotels/admission) to Old Reinbeck for a Club outing for next Summer or Fall. Coffee by Tom Bennett and Timbits were enjoyed by all.

RAA London/St. Thomas

The September 4th General meeting was held at the 427 Wing Building, at London Airport, with thirty- four persons in attendance.

In October Tim from Terry-Air is holding a seminar at Centralia. As well, the Edenvale Fly-in is coming up soon. Tim Anderson is also scheduled to speak at the Jet Aircraft Museum on September 19th.

Chris Staines gave an update to his article in the previous Slipstream regarding Toronto being bypassed to general aviation, Biz-Jets in particular, by the closing of Buttonville Airport. Jets are not allowed into the Island airport and runway length could also be a problem.. Chris requested that each of us write a personal letter to our local MP and MPP, including as an attachment, a copy of a letter which Don Hatch will be distributing to our chapter members very shortly. Point out that the lack of convenient general aviation, especially business aircraft, will cost Toronto business and jobs since many high end businesses move their executive personnel to business meetings via general aviation aircraft. Chris also noted that a restricted airspace up to 6000 feet is in effect over Port Franks according to the Toronto VNC chart. Apparently small lead projectiles have been noted flying all too close to low flying aircraft recently. At 6000 Ft + said projectiles have little or no penetrating energy left.

Howard Faulkner noted that he had some copies of the Plane- Trader publication from Oshkosh. Contact Howard if you want one. Howard also pointed out the danger of flying low over marijuana plantations often found in farmers corn fields and wooded areas. He related the story of an ultralight torched in his hanger following such a flight.

In September we had a great presentation by George Wilson and Cal Gillett of the London Soaring Club. I know I enjoyed the presentation and was amazed by the photos and the capabilities of their aircraft. In October, we will be having a presentation from Tim Anderson of Tim's Terry Air. This should be a great event, plan on being there.

Project Reports: Denny Knott reported about 14 hours flying time on the Skyhopper. The engine starts and runs fine, and the plane flies well so far. Some expansion is under way at Mark Matthys airfield with six more planes perhaps coming in. Three closed hangars at present with planned expansion in future. Phil Hicks reported the wing for his Sonex is well under way. Gary Bishop noted that the wing assembly table for the building of his Wagabond is in progress currently as well. Phil Hicks noted that Hilda Smeltzer was in attendance and was looking for sponsors for an upcoming walk for Parkinsons.

Phil Hicks introduced the speakers for this evening. George Wilson was the first presenter and Cal Gillett, second presenter, both from the London Soaring Club. George Wilson is a Sailplane (Glider) pilot, but also he flies a Harvard for CHAA on occasion. George passed out 8-1/2 by 11 sheets of paper and anyone who folded up a successful flying paper airplane became eligible for a draw at the end of the presentation. (Many weird planes emerged with varying degrees of grace in the air, but it was great fun to try anyhow!!) George also has a business repairing and tuning pianos. George presented a fine slide show outlining the aircraft available both gliders and the tow aircraft, operated by the London Soaring Club, and several shots of the airfield at Embro were included in the presentation. Cal Gillett then presented information on the tow aircraft and some of the gliders with which he was connected, including great pictures along with his explanations. Both speakers noted that the Soaring Association of Canada puts out a fine magazine that could provide much information to anyone interested. Also noteworthy was that several Chapter members had been involved with the London Soaring Club and were able to trade fascinating war stories from past experience with the speakers. Something that I personally found interesting was that Eagles have been using wing tip winglets all along; winglets were then adapted to increase glider efficiency, and now wing tip winglets are used on most airliners and business jets. Denny Knott won a Mug from the glider club, and Jean-Guy Trottier won a genuine gliding hat in the successful paper airplane draw.

Chapter 85 members Mark ter Keurs and Paul Trudel performing a field repair on the Turbi. Its wing had been damaged by a poorly marked signage the aircraft taxiied at a Fraser Valley grass strip. It was assessed safe for a ferry flight after field repairs and returned to Delta Airpark where it is undergoing the full treatment.

RAA Scarborough/Markham

At our September meeting, we saw a couple of excellent videos. The first involved the flight of the Vickers Vimy replica from Britain to Australia. A second one gave details of the Mosquito fighter/bomber.

Chapter 85 Vancouver

Approximately 10 members met at the workshop to contribute to the Turbi project. Gerard, John de Visser, Robin McNamara, Dan McGowan, Clif Dawson, Steve Gillis, Myself, Cyril Henderson, Charlie Longstaff, and a couple of dogs who wanted to learn how to do fabric work.

John de Visser had previously prepared the hangar and Gerard had prepared the airplane.

Jack Pomerleau arrived at about 11:00 and proceeded to inspect and test the fabric. He also looked extensively at the damage and the Temporary repair patch. His conclusions are the following. The fabric is in very good shape. The fabric is a vinyl type and the process appeared to look like the Polyfiber Process.

Jack has Offered to help and supervise the work if nec-

Join the RAA Forum

RAA's new forum is online! We hope to add many features over the next while to enhance the value of your membership. The URL is the same at raa.ca - once you're on the home page, simply click on the "forum" tab to get there. You'll find it a useful place to exchange ideas and ask questions - but it's only as good as the people who contribute to it. Help make this a useful resource for builders and pilots.

Any suggestions and ideas for improvements are welcome and can be sent to George Gregory at gregdesign@telus.net. Stay tuned for further developments!

essary. Charlie Longstaff and Dan McGowan both agreed that the repair could be Limited to the local area of damage. Jack's friend will come to look at the airplane and he will decide if he wants to do it. Thanks to everyone and specifically Robin McNamara and Jack Pomerleau for their help.

Currently we have 62 members

John deVisser mentioned that $500.00 has been set aside for a sandblaster and John is still looking for one. The compressor is up and running John is examining ways to plug the gaps in the doors which would lower the heating costs for the workshop John is will be producing some signage for the workshop. John Macready noted the excellent work John de Visser has done at improving the workshop and engine room.

John Macready expressed his thanks to Raymond Colley for returning the Turbi to the airfield by ferry flight, and thanks to Alex Routh for the help he provided during the recovery operation. John also wanted to thank Mark ter Keurs and Paul Trudel for the excellent field repairs they made on the Turbi. Since the aircraft was returned to the airfield Jack Pomerleau has assessed the damage as well as the condition of the fabric and suggested that the fabric was still in very good shape. He recommended that a regional repair on the wing would be sufficient to address the problem.

John thanked Robin McNamara for suggesting that Jack' help with the process of assessing and repairing the airplane.

Kevin Mayer is expected to give a talk about the Pratt and Whitney engine at the next meeting. John deVisser is organizing a tour of the Transport Safety Board facility in Richmond, BC The tour will most likely happen on a Saturday or Sunday, but the date is still TBA There will be space for 30-40 people to attend the tour. Rob Prior recommended to the membership that the tour would be a great learning experience Alex Routh offered the Chinese television segment that was made about him, his Jodel and other tenants at CAK3 to be viewed at the Christmas Party. The video could also be put on the chapter website. Raymond Colley noted that plans are underway to metalize the south side of the coffee shop building.

David McIntosh announced that, the Canadian Museum of Flight, will be receive its newly acquired Grumman Tracker (Firecat) on Friday October 5th. The aircraft will make a couple low passes and a water drop on arrival. Anyone interested can get more information from the Canadian Museum of Flight website: www.canadianflight.org David McIntosh gave a brief update on the restoration of the Lockheed Lodestar, the old gate guard of CAK3.

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"Never fly the 'A' model of anything" is very good aviation advice. Keeping this firmly in mind in the fall of 2000, I called the designer of the Texas Parasol to ask about the number of flying examples, the crash history, and the verification of the strength of the wings. All answers were positive, so I mailed off a cheque and shortly received a set of plans. At first glance they appeared to be reasonably clear, and the instruction manual was full of photos of examples, with claims of nearly a hundred flying.

THE STRUCTURE OF THIS PLANE is almost all 6061-T6 aluminum, with angle being used for the fuselage and round tube for the wing spars and empennage. The fuselage is hard riveted and the wings and tail use pulled rivets. The drawings call for urethane foam wing ribs, and wood is used as formers to give shape to the fuselage.

A few local RAA members were impressed enough to order their own plans, and we formed a co-op to build together in my hangar every weekend. A sheet of chipboard was split lengthwise to become the layout for the fuselage sides, ten lengths of ¾" aluminum angle were bought, and some rudimentary tooling was cobbled together to bend the lower longerons. The fuselage construction method was simple – just fit the angles together, gusset some of the intersections, then drill and cleco. The only difficult bit was to get the holes for the fin perfectly vertical, but we managed this with careful measurement and a hole saw. Two weekends later the first fuselage was ready to rivet! How could we miss? This was going to be easy!

A few minor dimensional errors were noted so we sent the corrections off to the designer, and we proceeded to set up layout boards for the tail components. I bought a Princess Auto pedestal tube bender for $79, member Bob Johnson made a hardwood bending die, and Gord Reed and I formed up several sets of tail feathers. By this time several more members had decided to build a Parasol, so we set up the layouts and tooling in the mezzanine of my hangar at Waterloo Airport. More builders kept joining, more cheques were sent off to the designer, and the original builders began instructing the newbies in the build procedures. The hangar was abuzz every weekend with members from as far as 100 miles away coming for instruction. A satellite group in Midland was formed after one weekend of instruction on fuselage construction. At one point there were a dozen fuselages standing on their noses while the initial fellows built their tail components. We ordered more tubing and Gord Reed bent up another fifteen sets of tail feathers.

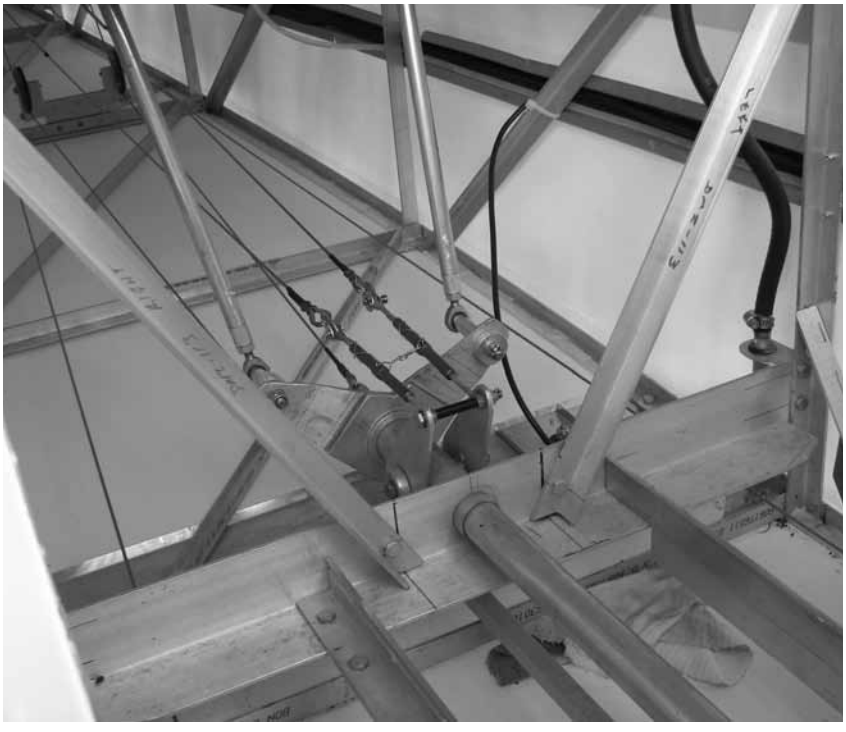
When a group of clever fellows get together, a lot of brainstorming can occur. One fellow made wooden alignment fixtures for the fuselage, another made improved forming dies for the ¾" angle longerons. Fixtures were

made for the landing gear and its lower cabane. Another came up with a match hole drilling procedure that ensured that the fuselage sides would be exact mirror images of each other, an innovation that cut in half the build time of the fuselage. We began using his method to cut, fit, and cleco our fuselages together, and once even demonstrated building a complete fuselage at a two day fly-in. The group was gaining momentum and we all anticipated group Parasol flights to events. Those were indeed heady days, but they were not to last.

The wing proved to be the turning point in the Parasol project. The first question we had was about the cabane section which had nothing for fore and aft location. The plans showed x-wires between the two parallel lift struts of each wing, and these were to provide fore and aft, drag-antidrag, and wracking functions. If even one of the wires let go all hell would break loose. It seemed a bit much to expect of a couple of wires so I called member Mike Davy, who was at the time the tech resource for RAA Canada. Before his retirement he had been the senior stress man at DeHavilland and he had helped many RAA members with their design questions.

Mike suggested adding fore and aft triangulation to the cabanes to help stabilize the wing structure. He also suggested that we make the wing ribs from .016 aluminum instead of from foam. That would allow the option of replacing the fabric with .016 aluminum skins if desired, giving both torsional and drag-antidrag stiffness, and would also allow the deletion of many of the original internal components that were necessary with fabric. The tradeoff would add only a bit of weight but a lot of strength, and of course the wing would then be weatherproof. We had not asked Mike to do a stress analysis of the wing spar because at that point we still trusted the designer. Then one of the Midland fellows emailed to say that he had asked Chris Heintz to check the wing drawing for spar strength and it had been pronounced lacking. We sent the drawings to a few other members who were engineers and they confirmed that the forward wing spar was underdesigned.

I called the designer of the Parasol with the findings, and as anecdotal affirmation of the strength of his wing he gave examples of flying aircraft in Texas, one of which did “aerobatics”. We could not get any real engineering answers from him so we built a test wing and lift struts, outfitted the front spar with strain gauges, and did a load test with bags of water softener salt while an engineer member monitored the test. We determined



Above: The interior of the tailcone shows the fuselage construction method. Opposite: Daryl Kings' wing has aluminum ribs and a 2.5" front spar; the design originally specified foam ribs. Right, the Midland boys: Don Morrow, Bruce Tinney, Burt Parsons, and John Spick in their Midland skunk works. Below, John Spick also machined up the oleos for Don Morrow's Parasol

gross ultralight, and then used it for his 700 pound plane. We also found that his own plane had a wing and fuselage different from the plans he was selling, and the aerobatic plane was by a different designer and had yet another different wing. Our eyes became opened to the seedy side of ultralight design.

Disappointment coursed rapidly through our group, and some gave up immediately. The Midland fellows asked Chris Heintz for help and for them he designed a retrofit internal brace for the front tubular spar to give it the required strength. Mike Davy was willing to help too but then he went into hospital and died suddenly, leaving the group without a technical advisor.

Projects began changing hands and some were just cut up for scrap. Several of us prevailed upon an engineer member to redesign the wing, and it was determined that going from a 2" tube to a 2-1/4" tube would nearly double the G's. Since that without the jury struts in place the front tubular spar would buckle at something over 2 G's, and with the juries in place it would have a buckle failure between 3 and 4 G's. It was not comforting to know that if a jury strut came loose the wing could collapse in a steep turn if there were any turbulence.

When a group of clever fellows get together, a lot of brainstorming can occur.

We presented the designer with the results of the physical test and he went into denial mode. Searching further we found that he had cribbed the wing design from a 500

Cockpit access is improved with the optional drop-down door. Jimmy also removed the X-wires between the lift struts and substituted drag-antidrag bracing inside the wings. The Parasol owes a lot to the vernerable Baby Ace

the forward spar was also the nose of the airfoil this would necessitate a redrawing of the airfoil to accommodate the new nose radius. The remains of the group began moving forward again, with the Midland fellows using Chris Heintz's retrofit, another designing his own retrofit internal reinforcement, a couple using the larger diameter tube, and one using the wing design of the venerable Beaver ultralight. No engineer was willing to sign anything that would affirm that any of the redesigns would be safe, so from that point there was no more group effort, and the rate of progress became markedly diminished.

Despite the wing disappointment, the plans are not all bad. The plane bears a dimensional resemblance to the Baby Ace, but made with aluminum angle and aluminum tube instead of steel tube, wood, and fabric. The Parasol tailcone is a bit shorter but the tail areas are enlarged to provide similar tail volume. The landing gear is Cub-type with steel weldments at the axle end to accept the aluminum tube legs. On balance the Parasol is not such a bad

The Midland Parasols have everything faired, and fully enclosed cockpits for cool weather flying. Bottom left, Daryl even carved the prop for his Parasol's rear-drive VW engine. Right, Bruce Tinney's Parasol with its original Verner engine, now replaced by a Jabiru 2200.

design except for the wing structure.

The fuselage construction method is the good part of the Texas Parasol. It is made from ¾" aluminum 6061T6 angle with a 1/8" wall thickness. All joints are riveted, with the highly loaded clusters being reinforced with 1/16" aluminum gussets. The ¾" angle weighs a bit less than 5/8" x .035 chrome moly tubing and because there is no fishmouthing or welding it is a lot easier to build with. Some other ultralights use round aluminum tube blind riveted with gussets but round tube requires very precise hole locations. Building with aluminum angle is a walk in the park and it is cheap like borscht – my local metal supplier sells ¾" 6061 angle for under a dollar per foot. If I were considering the build of a Pietenpol I would seriously consider using this construction method for the fuselage. Giving credit where it is due, the angle construction method was pioneered by Chuck Beeston, the fellow who built all the planes that the Texas Parasol's designer was claiming as his own work.

The Parasol fuselage is a rectangular box in cross section so shape is made with wood bulkheads and stringers, to whatever shape pleases the builder's eye. No aluminum welding is required so anyone could build a fuselage in his basement, up to the point where riveting noise might get you chased out to the garage. The drawings have the fuel in a cowl tank but some of our builders opted to place it in

A classic open cockpit aircraft, the Parasol features pleasant handling, a vintage open-cockpit experience, and a stall speed in the mid-thirties. Below, Daryl King's spiffy Parasol.

the wings, using plastic 5 gallon generator tanks that Princess Auto had in their surplus department. The drawings also allow for the installation of a dropdown door, and most opted for this to make it easier to get in and out of the cockpit.

There were at one time almost twenty Parasols under construction in Ontario and we can now account for six that have been completed:

Daryl Kings has done a splendid job, even making his own mould and then the nosecone for his VW engine. Daryl also went the last step and carved his own prop using the old fashioned chisel and spokeshave method. He has been doing taxi tests at his home strip and has had the tail up but the strip is rather short for a first flight. Daryl plans to relocate the plane to another strip soon to do his flight test regime, and then the plane will be based at his home strip. Daryl's plane has been painted in green latex house paint and it is a real showpiece. He has a website that is well worth looking up at www.dktp.t15.org It shows the entire construction process including designing the engine mount, cowling, and the hand carved propeller.

Bill Rice has completed his Silverbird Parasol with a VW engine, covering the fuselage and flying surfaces in aluminum sheet. Bill does not fly any longer so his plane has been sold to member Stan McClure who plans to rebuild the wing with a larger front spar.

Bruce Tinney powered his Parasol with a Verner engine but found it too heavy. He has since repowered with a Jabiru 2200.

Burt Parsons and Don Morrow built identical yellow Parasols with aluminum wings and Rotax 503 power. These two planes are like jewelry, with all of the delicately machined aluminum fittings made by John Spick. Don also made aluminum oleo struts for the Cub-type landing gear. These planes have the Chris Heintz internal front spar reinforcements, .016" aluminum wing ribs, and .016" aluminum skins. The fuselages and tails are covered in 1.7 oz ceconite with Cub yellow dope, and the cockpits are fully enclosed with lexan windows all around. These two planes can cruise at 80 mph, with a short takeoff and landing roll, and a climb of 500 fpm.

...once any given construction question was solved, everyone in the group immediately knew the solution and could move ahead quickly.

They are based at Bruce Tinney's 1500 ft runway, more than enough for a Parasol.

Jimmy Kennedy's "The Brolly" (Irish for umbrella) is the latest Parasol to fly, with first flight on August 6th 2012. He did a careful weight and balance beforehand using the RAA scales and determined that he needed to move himself forward in the cockpit to get into the correct CG position. Because his Rotax 503 has a single carb and a pull start the empty weight of The Brolly is 419 pounds. His plane has wings based on the Beaver RX 550 ultralight, using its high camber airfoil. Jimmy has been flying a Beaver for twenty years so flying the Parasol was not unfamiliar territory. His friend Keith Wallace did the fabric work and they finished it in Cub yellow latex paint. The cockpit opening is nicely trimmed with brown naugahyde, and it has a dropdown door for cockpit access. The interior of the cockpit is trimmed in a very lightweight fabric and looks professionally done. The panel is simple VFR steam gauges, typical of ultralights.

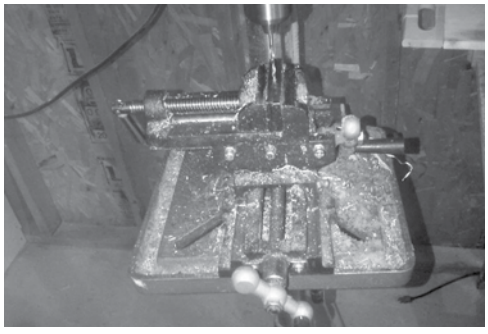
Fuel is currently being carried in a small tank on the floor between the legs, and a Mikuni double outlet pulse pump delivers it up to the Rotax 503 engine. Two Princess Auto generator fuel tanks will shortly be installed in the wings for longer range and gravity feed. Jimmy made all of his cowlings and nosebowl from aluminum, hoping at first to be able to use ram air cooling, but heating issues caused him to revert to the stock belt-driven fan cooling.

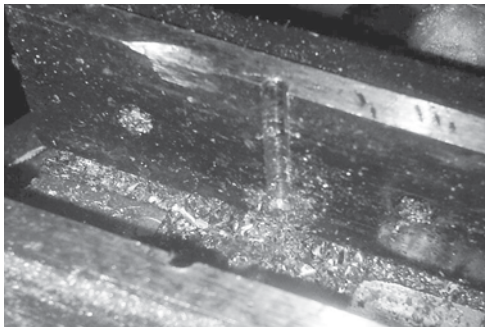
Jimmy has just begun to explore the performance envelope of his Brolly and he says that it gets the tail up immediately and accelerates quickly, and then jumps off the ground within a two hundred foot roll. Climb is good at over 500 fpm (no VSI) and cruise is in the 65-70 mph range, a bit slower than the Midland 503-powered Parasols but they have dual carbs and a lower camber airfoil. Upper air testing shows a stall speed under 30 mph, and an approach near this speed gives an almost immediate stop after landing. The Brolly's controls are light and balanced in effort, and very responsive. A Beaver 550 is rather lethargic in roll but The Brolly with the same ailerons has an immediate response to the stick. Jimmy's home strip has a wall of trees at one end and the plane slips nicely to spill altitude after clearing the obstructions. The open cockpit is not draughty and provides a vintage open air experience. This project took nearly a decade of off and on work and Jimmy Kennedy is now one very happy fellow.

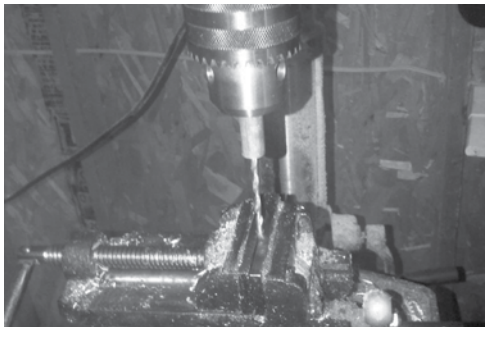
The whole Texas Parasol saga has certainly had its peaks and valleys. Historically 5% of plansbuilt planes end up completed, and this group has half a dozen out of some twenty starts. We credit the group build process for this percentage because once any given construction question was solved, everyone in the group immediately knew the solution and could move ahead quickly. There was great camaraderie among the group, and I would recommend the group building of simple aircraft to any chapter that wishes to build membership. However I also suggest a thorough investigation of the design before buying plans and cutting metal. The internet was not nearly as well developed in 2000, so it should now be a lot easier to learn the facts before beginning.

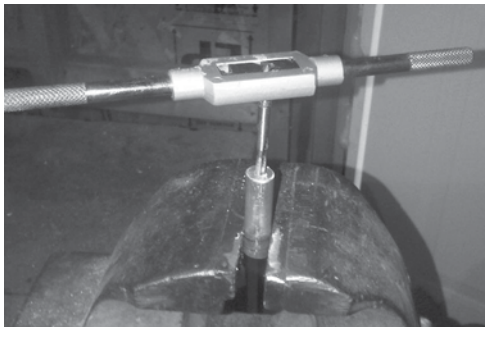
John Spick made all the machined components for the Midland Parasol group.

Should you wish to learn more about the Parasol aluminum angle construction method, the plans appear to be readily available on the internet. Just google "Texas Parasol plans" and you should be able to find them. Some sites ask for a donation and some offer them for free.









Easy Rod End Fittings

Jesse Beauchamp

Here's an easy way I found to make female threaded rod end fittings using a drill press instead of a lathe. This method makes consistent, perfectly centred holes in rod which can be a tricky thing to do without the use of a lathe.

The control system requires several push-rods so it was necessary to come up with a way of producing good quality rod ends with a tool found in the average shop. I have a $40 X and Y adjustable drill press vice from princess auto bolted to the table of my drill press. With the jaws of the clamp closed tightly I used the drill press to drill a 9/64" hole perfectly straight down into the jaws. When this was done I opened the jaws and in each jaw there was cut a nice and neat half cylinder. I then placed a #21 drill bit (I'm making 10-32 threads) upside down in the groove I had cut so that the tip of the bit is pointing up towards the chuck of the drill and clamped it tight. I took a piece of 1/2" aluminium rod (about 3" long) which is to be turned into the rod end and put it in the chuck of the drill press. This setup will turn your stock to be cut against a stationary bit. With the drill press turned off I brought the rod down to the tip of the bit and centred it visually as best I could. Then, with the drill press running, I gently brought the rod into contact with the drill bit tip. Because this setup forces the bit to "want" to find centre, the bit will wobble slightly if it is off centre. I simply adjusted the X and Y knobs on my vice until the wobble stopped so I knew I had dead centre, I could then proceed to drill my hole. After that I just tapped the hole with a 10-32 tap and the rod end was done and ready to be slid into a piece of 1/2" I.D. aluminium tube. I hope this method can help someone. I was very pleased with the results!

Penetrating Oil Co

The April/May 2007 edition of Machinist's Workshop did a test of penetrating oils where they measured the force required to loosen rusty test devices. All samples were equally rusted, then immersed for 8 hours in the various fluids. The lower the number of pounds the better.

Mighty interesting results for simple acetone and tranny fluid!

**The ATF-Acetone mix was a 50/50 mix (1 to 1 ratio).*

lints

Motor Mounts

Wayne Burtney

AS A MEMBER of RAA National, RAA Brampton and RAA Flamborough I have a lot of resources to draw upon.

For ten years I have been building a kit plane made from aluminum with solid and pulled rivets. I am not a very fast builder but I do a good job and I have come to the point where I require an engine mount; however, I am *not* a very good welder. I was quoted, by the kit manufacturer a price of $1,895.00 plus HST = $2,141.00(!). I said "No, thank-you. "

"But we have the jig" they replied.

I said, "Keep it."

The airplane was originally an ultra-light. With structural design changes and heavier metal, the gross weight has been bumped up to 1700 pounds. The ultra-light version used a 912 Rotax, with a five point motor mount. I am using an O-200 and because the engine has to be mounted as high as possible, I have to use a four-point mount.

The firewall is made of 1" x 1/8" 6061 T6 Aluminum angle. I had to make 4,130 steel brackets to attach the mount to the firewall.

I thought I could use a wood jig but everyone I talked to told me, "don't do it". An RAA Kitchener member volunteered the use of his firewall jig. The steel for the motor jig, which I arc-welded, was purchased at Princess Auto.

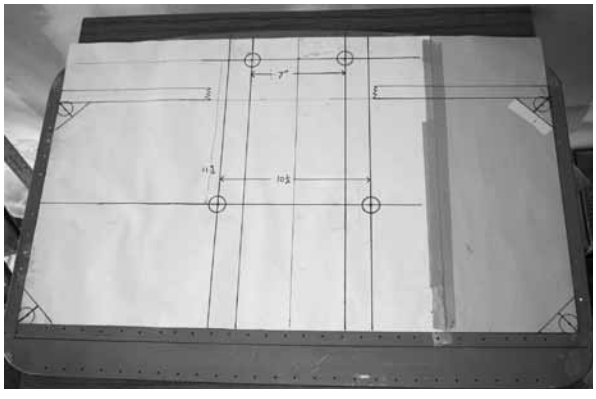
To begin, I made a full size drawing of the firewall and engine attachment points on Bristol board. From that I calculated where my motor and mounting points should be placed and transferred these points to my jig.

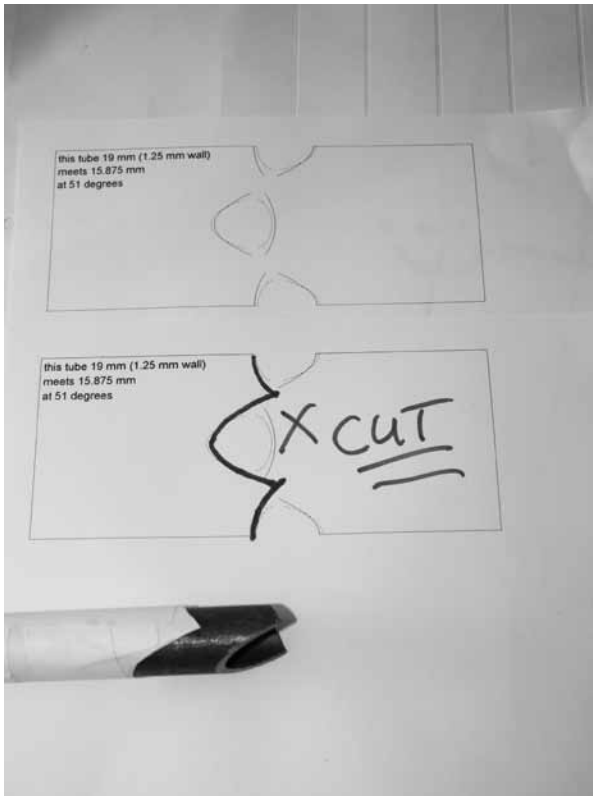
For the spools, I used 5/8" 4130

omparison test

Penetrating oil	Average load	Price per fluid ounce
None	516 pounds	
WD-40	38 pounds	$0.25
PB Blaster	214 pounds	$0.35
Liquid Wrench	127 pounds	$0.21
Kano Kroil	106 pounds	$0.75
ATF-Acetone mix*	53 pounds	$0.10

The Tubemiter program asks the tube diameter, thickness and diameter of the tube it attaches to... you then get a printout, which you cut out as a pattern and wrap it around the tube.





tubing Aircraft Spruce Part # 03-04110. For the washers, I picked extra thick ones from the local hardware store. I removed the zinc with dilute hydrochloric acid. The tubing was notched to fit the washers. The mount tubing was 0.75" 0.049" 4130 and 0.625" 0.049" 4130 steel tubing purchased at Aircraft Spruce Part #'s 03-04400 and 03-03700.

An RAA member told me to grind the attachment bolts into a triangle so they aren't welded to the spools.

The Black Art of Fishmouthing revealed

The fishmouths on the ends of the tubing may seem like a difficult task but I found a program called tubemiter.exe, to download from the Internet. Tubemiter.exe makes fish mouthing as easy as slicing warm butter. Some eyeballing and grinding to fit is needed on some pieces but the four main standoffs need no grinding to fit. The Tubemiter program asks the tube diameter, thickness and diameter of the tube it attaches to. You then get a printout, which you cut out as a pattern and wrap it around the tube. From that a quick hacksaw job and it is done. A detailed explanation can be found at http://skyotelog.blogspot.ca/2011/08/o-200-engine-mount.html .

My motor mount is required to be absolutely square with no offset. My big surprise came when all six support tubes were the same length. The length was measured with a tape, spool-to-spool and a little extra. Because there were only four mounting points and I was using an O-200, the Lord mount was my choice. The Lord mount requires a ring

From top down: An RAA Kitchener member volunteered the use of his firewall jig. The steel for the motor jig, which the author arc-welded, was purchased at Princess Auto.
Centre, a full size drawing of the firewall and engine attachment points was made on Bristol board.
Bottom, drawings of the fishmouthing process.

around the motor attachment points, which I bent with a torch.

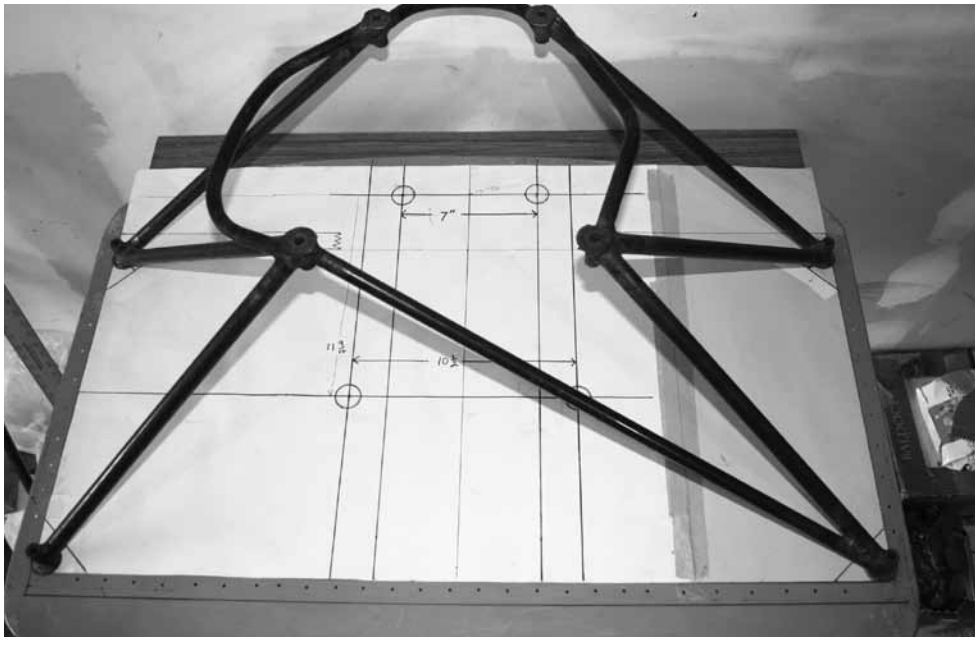
Since my welding skills are limited, I asked RAA member Bill Brubacher who is skilled in gas welding and he offered his help.

The welding rod is most important. My choice is ER70S-2 mild steel.

Because the jig is a great heat-sink the first four main tubes were tack welded in the jig, taken out of the jig, held in a vice and welded. The tubes were then put back into the jig. The remaining tubes were tack welded. The mount was removed from the jig, held in a vice and welded. The mount was then put back into the jig, straightened and normalized.

The motor mount is ready for installation.

I'd like to thank RAA members Tom Mills, Buzz Steeves and Bill Brubacher for their support and help with this project.



Fishmouthing continued: top, an example of a nicely done piece; right, it goes together real nice. Because the jig is a great heat-sink the first four main tubes were tack welded (centre) in the jig, taken out of the jig, held in a vice and welded. The tubes were then put back into the jig. The remaining tubes were tack welded. The mount was again removed from the jig, held in a vice and welded, then finally back into the jig, straightened and normalized.
Left: Finally, the motor mount is ready for installation.

Toronto / continued from page 15

We are now at a similar point in the development of air travel. The privacy, security and scheduling convenience of private aircraft, whether leased or owned is expanding and one of the most astute investors in the world, Warren Buffet, has realized this; hence, his investment in the aircraft leasing company NetJets.

Unfortunately, the City of Toronto, the Federal and Provincial governments do not realize this evolution in transportation. The City of Toronto will soon be in the unique and unflattering position of being the only large city in North America that does not have a general aviation airport able to accept business jets. Toronto Pearson has only a limited number of landing slots and also very high landing fees. The Toronto Island airport does not accept jets and Buttonville airport will soon close. Recently the Oshawa city council elected not to extend their runway by one thousand feet, which would have made it possible for the bulk of the business jets in use today to land there. Though an option, Hamilton airport is a long drive away, particularly at rush hour.

Unfortunately, the City of Toronto, the Federal and Provincial governments do not realize this evolution in transportation

If you are a business owner and looking to expand you look not only at the infrastructure to move your company's products, you also examine the movement of your personnel. Are you going to look at Toronto favourably when the 'roadway of the future' bypasses it? In a few years a business jet trip to Toronto, via Hamilton airport and a one hour or longer drive will probably "seal the deal" about locating in Toronto, particularly if you are familiar with the friendlier general aviation attitudes south of the border.

When travelling throughout the United States it seems as though every little town has an airport. Most businesses won't consider a location that does not have easy access to private air transportation. Even Wal-mart has a fleet of twenty two jets to move executives around quickly and make better use of their valuable time, and in the early days of his business, Sam Walton used to scout out locations from the air in a light aircraft. The differences in the attitude of the federal governments in Canada and the United States is obvious in the subsidies the Federal Aviation Administration gives to smaller airports to maintain a viable network throughout the country and encourage business investment in smaller centers. Roads receive massive subsidies in Canada, but a five thousand foot length of asphalt at a small airport does not, even though the federal government collects a generous tax on aviation fuel.

All levels of government have realized that high-speed internet connectivity, and the rapid movement of data, is crucial for success in education, business and social development and have fostered policies to ensure this. The policies with respect to the rapid movement of people, in many ways just as critical an issue, are outdated and the closure of local airports in Canada underlines this policy failure. The federal government's 'National Airports Policy' is an abject failure and akin to a document on a telegraph when people are using computers. It essentially passes all responsibility for all but the largest twenty-six airports in Canada to local governments. Can you imagine if every local council controlled the construction and location of our major highways? It is time to recognize how important this small airport network, capable of handling modern business jets, will be to Canada's economic future. Others, south of the border already understand this evolution of transportation and Warren Buffet knows it and plans to profit from it.

Does Toronto really want to be like the town the new interstate highway bypassed, still present, but watching the business going down the road to the next place with an entrance to the future? The politicians may argue about the location of Canada's 'finest city,' but it is no secret where the growth is. There have been suggestions that Ontario might benefit from manufacturing 'oil patch' equipment for western Canada. Most major oil companies in Alberta have built their own airports to move workers around quickly and efficiently. Anything that can be done to enhance the efficient, rapid, flow of people into and out of Toronto will ensure this high value added work is done in Ontario and not south of the border 'at the next freeway entrance'.

President's Message / cont'd from page 2

the front limit, a condition that can occur if the panel and interior are full and the pilot is plus sized. A loss of elevator control with a far forward CG can then mean an uncontrolled trip to the ground. This did happen several years ago when a novice pilot foolishly modified his elevator controls and they broke in flight, resulting in a double fatality.

Winter is coming and flying season is nearly over for most. This is the time to do a weight and balance to know where in the CG range you are flying. Then take a test flight and see if the plane will maintain level flight without stick input. Keep bending the elevator trim tab until the plane will fly hands-off and level when at cruise power. That way if the elevator cable ever breaks the pilot can still have some measure of control of the plane by varying engine power.

Even better is an in-flight adjustable elevator trim, either electric or a simple cable, that has enough authority to control the pitch of the plane. My own plane has this and I practice landings using just the trim and throttle. It is reassuring to know that there is redundancy if it becomes necessary.

CAMERAS and GPS

It is now rare to find someone who does not carry a cell phone, most of which are equipped with cameras, and these now provide a great incentive to fly properly when at public events. At one time it was common for pilots to stunt when arriving at or departing a fly-in, knowing that if anyone ever complained it would be "he said, she said" and they could do this with impunity. Now that almost everyone on the ground has the capability of immediately shooting a video, the situation has changed. Recently at a non-RAA event there was a powered parachute pilot stunting, flying low over the crowd and interfering with the circuit. One was doing pendulum swings and ended up crashing heavily into the ground and breaking his leg. The police and rescue people arrived, and someone who had shot footage provided it on Youtube. With video footage it was impossible to come up with a plausible excuse for this illegal flying.

With video footage it was impossible to come up with a plausible excuse for this illegal flying.

Last year the TSB released the report of a fatality in an RV-7 and they were able to dump the information from the GPS to determine that the plane had been performing aerobatic maneuvers at over Vne. There was also an on board video camera, and when its footage was combined with the GPS information the TSB were able to reconstruct the flight path and determine the cause of the inflight breakup.

Tiny video cameras like the GoPro Hero are cheap and they can be mounted anywhere. Drivers who commute now mount these cameras on their dashboards to prove who changed lanes and caused an accident, and bicyclists mount them on handlebars to prove which taxi opened a door in front of them. If you live in a large city you must assume that you are almost always on someone's security camera.

Pilots are now installing Hero cameras to record their flights for later review, and to share the joy of flight with their landbound friends. If someone cuts them off in the circuit or causes a near miss, there will of course be proof of the occurrence. The barnstorming days are almost over unless a plane has just steam gauges, no GPS, and there is no audience.

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 Iberville, Fermont. Contact Pres. Serge Mihelic, 418-287-3340.

MONTREAL (LONGUEUIL): Chapter 415, Meeting in French second Wednesday at 8 pm, at CEGEP Edouard Montpetit 5555 Place de la Savane, St. Hubert, PQ. Contact president Normand Rioux at NRIOUX@lapresse.ca

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 CONSTRUCTUERS 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 CONSTRUCTEURS 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 Fourth Saturday (and second Sat. as well) each month 9:00 am at the restaurant at Lake Simcoe Regional Airport Contact Secretary Dave Evans 705 728 8742E-mail david.evans2@sympatico.ca

COBDEN: Third Thursday 8:30 pm at Club House, Cobden Airport. Contact Pres. Clare Strutt, 819-647-5651.

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. George Elliott gaelliott@sympatico.ca 705-445-7054

EXETER: Second Monday 7:30 pm at Summers-Sexsmith Airfield, Winters-Exeter Legion. Contact Pres. Ron Helm, ron.helm@sympatico.ca 519 235-2644

FLAMBOROUGH: Second Thursday 8:00 pm at Flamborough Airpark. 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: Meets the third Monday of each month in the upstairs meeting room of the cadet building at CYKF, except during the summer months when we have fly-ins instead. Please contact Clare Snyder clare@snyder.on.ca

LONDON/ST. THOMAS: First Tuesday 7:30 p.m. At the Air Force Association building at the London Airport. Contact President Phil Hicks p.hicks@tvdsb.on.ca 519-452-0986

MIDLAND/HURONIA

Meeting: First Tuesday, 7:30 pm at Midland/Huronia airport (CYEE) terminal building. Contacts: President Ian Reed – 705-549-0572, Secretary Ray McNally – 705-533-4998, E-mail – raa.midland@gmail.com .

NIAGARA REGION: Second Monday 7:30 pm at Niagara District Airport, CARES Building. Contact Pres. Elizabeth Murphy at murphage@cogeco.ca, www.raa-niagara.ca

OSHAWA DISTRICT: Last Monday at 7:30 PM at the Oshawa Airport, South side, 420 Wing RCAF Assoc. Contact President: Jim Morrison ,905 434 5638 jamesmorrison190@msn.com

OWEN SOUND Contact President Roger Foster 519-923-5183 rpfoster@bmts.com

OTTAWA/RIDEAU: Kars, Ont. 1st Tuesday. Contact: Secretary, Bill Reed 613-831-8762 bill@ncf.ca

SAUGEEN: 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@symptico.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/sfcraac.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 Caithcart 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 19:00-22:00 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 Don Rennie drennie@hemisphere-eng.com 403-874-0876

EDMONTON HOMEBUILT AIRCRAFT ASSOC: First Tuesday 7:30 pm EAHS boardroom. Contact President Bill Boyes 780-485-7088

GRANDE PRAIRIE: Third Tuesday, Chandelle Aviation Hangar, contact Jordie Carlson at 780-538-3800 work. or 780-538-3979 evenings. Email: jcarlson@telusplanet.net

BRITISH COLUMBIA

ABBOTSFORD: Third Wednesday 7:30 pm Abbotsford Flying Club, Abbotsford Airport. Contact President, John Vlake 604-820-9088 email javlakeca@yahoo.ca

DUNCAN: Second Tuesday 7 pm members homes (rotating basis). Contact Pres. Howard Rolston, 250-246-3756.

OKANAGAN VALLEY: First Thursday of every month except July and August (no meetings) at the Mekong Restaurant.1030 Harvey Ave. Dinner at 6:00pm, meeting at 7:30pm Contact President, Cameron Bottrill 250-558-5551 moneypit@uniserve.net

QUESNEL: First Monday/Month 7:00 p.m. at Old Terminal Building, CYQZ Airport. Contact President Jerry Van Halderen 250-249-5151 email: jjwvanhalderen@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 President: John Macready jmacready@shaw.ca. Website http://raa85.b4.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 - zzALASKA 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*
email: raa@raa.ca web: www.raa.ca

Classified Ads

To submit or delete a classified ad, please send to 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. Ads can be emailed to : classified@raa.ca

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.
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The Recreational Aircraft Association Canada does not assume responsibility for advertisements, but does exercise care to restrict advertising to responsible, reliable individuals.
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Recreational Aircraft Association Canada
President: Gary Wolf / Treasurer: Wayne Hadath

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For Sale

FOR SALE KR-2 FUSELAGE in boat stage and metal kit for retractable landing gear castings $300.00 call Ian 604-856-1159 or email tri-pyramid@telus.net Dec11

PROPELLERS, wood, new, never mounted, tractor cwise (view from cockpit), priced OBO plus shipping: One 42x23, weight 2 lb., Lepper, conventional outline, 4 bolts on 70 mm b.c., $195. One 43x34, 4 lb., squared tips, 6 bolts on 75 mm b.c., $295 Call Frank, 905 634 9538

2002 CP 301-A Emeraude. First flew June 2003. TTAF 50 hrs. 0 290G Lycoming 396 hrs. since major. Sensenich metal prop inspected and refurbished by Hope Aero June 15/09. Dual controls (pedals, sticks throttle) custom interior. Annual due May 2012. Always kept in a hanger. Contact Jim Demerling 519-348-9655 (Ont.) $21,500.00

Whelen lights $650 OBO Whelen A650-PR-14 and PG-14 wingtip pos/strobe. A500AVD1 Tail pos/strobe, A490TCF power pack. NEW! Chris 1-866-733-8432

0320 E2C currently mounted on my Osprey which could be included in sale. Osprey has 175 hrs since new engine has 1850 but was dissassembled for a propstrike inspection 200 hrs ago Compression 125 lbs cyl on all four jugs oil pressure good complete with accessories. $6000 for engine $9000 for all aircraft needs refinishing and recover Larry Taylor 250-492-0488 days ltaylor@pacificcoast.net

SKYBOLT FUSELAGE with Marquart Charger cantilever U/C., tail feathers, rudder/brake pedals, metal fittings, axles, wheels. Offers. Bill Phipson #3954. Phone 416-431-2009 Dec11

FOR SALE: Zenith CH601XL , airframe 80%

complete, controls installed. Canopy mold. No landing gear. Subaru 2.2L no re-drive. $3000 or best offer. Call 705 279 4399 or 519 351 6251

EUROPA XS monowheel with Rotax 914 turbo engine and Airmaster constant speed prop, 87 hrs total time. VFR panel with Mode C transponder, KMG GPS, Becker 720 com with intercom and headsets. This is a fast and efficient cross country aircraft with low fuel consumption. Asking $65K, no reasonable offer refused. Contact Hazel Peregrym at 250-672-5587 snowgoose@telus.net

Woodward Governor, Guaranteed serviceable, was overhauled and used 25 hours before removal for engine upgrade. $350. Chris 1-866-733-8432

ZENITH CH300 for sale First flight 1990 265 hours TT airframe and engine. Lycoming O320 E2D 150 HP engine professionally "zeroed" by Leavens aviation with all documentation. New McCauley cruise prop installed 3 years ago (cruise all day at 135-140 mph on 8gph). Professionally painted by flying colours in peterborough..$10,000. New sliding tinted canopy installed 5 years ago. New interior Full IFR steam gauges. Blue mountain EFIS light. 3 axis auto pilot. True Trak pictorial pilot AP coupled to Garmin 396 Truk Trak Altrav VS altitude hold with verticle rate. Flo scan fuel management system computer with opitical transducerKing digital 720 radio. Narco mode C transponder with encoder. Ammeter and Volt meter. 4 place intercom for front and back seat headsets. Full lights inside and out for night flying. New tires 2010.12 volt recepticals front seat and back seat for PAX. Reiff full pre-heat system for winter operations..(oil pan heat and cylinder bands for each jug.). Air Wolfe remote oil filter system installed for 50 hour intervals and added engine protection.
New Marvel carb installed 2007. All logs and plans..All owners manuals and professionally produced POH Always maintained to highest standards…$ 35,000….(certified and e-tested!!). I would have no qualms selling this aircraft to anyone…..a joy to fly. Warren 289-259-6460

STITS SKYCOUPE with O-290 125 hp, 240 hrs TT. Garmon 195, Escort 110, ICOM A5, intercom, wing tanks. Located at Burlington Ont CZBA. Must sell due to financial constraints. $12,500 OBO. 905-332-7331

CAVALIER 102.5, "Aero Sport Power" O-320-B2B; 152 TTSN. Sensenich metal prop. Airframe was totally rebuilt in 1997; 1750# GW, 622 lb useful load; VFR instruments + Garman GTX 327 TXP Mode C & Val Radio; Trutrak Turn & Bank; Kept in heated hangar; 8/10 inside and out. $28,000 or would consider trading for a 912 Kitfox, Merlin, Zenith 701, or similar. cavalier102@uniserve.com or 250-558-5551. Ask for Cameron.

TEAM AIR BIKE; 2 Seater Tandem, unfinished; fuselage complete. HKS Engine (New) 55 Horse. 3 Blade Prop Adjustible. All Instruments; Sitka Spruce Wing Material, wings not built yet. Best offer over $!0,000.00
Contact Dave Gladman; to view dgladman@cogeco.ca

LONGEZE PROJECT with all major fibreglass work completed. Main wings and canard have been matched with the fuselage. Baggage /fuel strakesare complete. There is also a Lycoming O-235 engine available. Work remaining includes elgnine mount, instrumentation, prep and paint. j.f.doyle@shaw.ca

TWO NEW 600-6 CLEVELAND WHEELs complete with brake discs and hydraulic pucks. 1.5" bearings included. New tubes and Mallory Airhawk tires 600-6 type 3, 6 ply. Selling for $240 per side. Complete front landing leg and engine mount including oleo and nosewheel with tire from 65 Cessna 150, not damaged. This has been sandblasted and undercoated. $400. O-200 Continental starter, cable type with 60 hrs since major. $100. Carb airbox for O-200, $40. 403-545-2609 in Bow Island, west of Medicine Hat.

Bowers Fly Baby, Continental 85, 350 TT on engine and airframe. Always Hangared, flown regularly, owner built. Fun, affordable flying, $12,000. Phone 403-614-3855 or email, jw.gray@shaw.ca

MINI-MAX. TTSN 220. 31 hrs since ROTAX 440 and GSC prop overhaul. Always hangared VG condition. ICOM Nav/Com. Medical forces sale. $9,900.00 OBO.
780-460-6841 or cell 780-945-0411

Lost medical Selling plane and hangar. Wittman Tailwind aircraft W8 model, with a Continental C90-14F engine. TTAF 892 Hours, Time on engine 892 hours since overhaul. Rebuilt cylinders installed at 469 hours. Ivo propeller ground adjustable. NO generator. Fuselage recovered last year. Beside the standard instruments is an electronic tachometer, manifold presure guage, 1 radio, 1 transponder. Also a 406 ELT.
Plane has always been hangred except for camping flyins. Price $12,000.00 as is . Jack Steele Brockville ON 613 865 8107 jsteele7@cogeco.ca

ENGINE - LYCOMING 0-320 A3A, 968 SMOH, with starter, generator, mags,
to remove from flying a/c, $9000 + shipping. 905.878.4017, mohne40@yahoo.ca

Glasair 1 kit. as supplied by Glasair but with both conventional and tricycle gear and extended wing tips. Wing in jig , close to closing. Good short field airplane capable

of 200 MPH. $13,500 no tax, or crating fees ect. Richard 705-652-6307

King Avionics as removed wrkg from a 182. KMA24, KMD150, KT76, KY197. All guaranteed working. Offers? Chris 1-866-733-8432

Pazmany PL-2 $39,000, 150 hp O320 E2A, McCauley FP metal prop. 1090 hours TT, NDH, always hangared. Full Panel, Good Condition
Hamilton Ontario retaborek@gmail.com for specs and photos

CORBY STARLET CJ-1 90% PROJECT • $2,700 • OBO • Fuselage, 2-pc wing, empennage, wheels/brakes on temp gear, f/g canopy &, cowl, wing tips, reg'd U/L in Canada • Contact Mike Shave, Fergus, ON Canada • Telephone: 519 843 4214 gy20minicab@gmail.com

Heated Pitot, off C150. $350 Chris 1-866-733-8432

Bendix/King KY 97A vhf com radio with shelf and wiring harness. ($1500). Collins transponder (mode 'C') with antenna, shelf and wiring harness ($1100). I-com 4 place intercom (with music option) ,with shelf, wiring harness and head phones jacks. ($100). 2, 4 point hooker harness. ($ 100 ea. set) Contact Norm at graham110@rogers.com for details.

VAL 760 TRANSCEIVER, SN. 04275. Worked when removed for panel upgrade. Asking $600 obo. Comes with mounting tray and connector. Estimated mailing cost $35. Direct inquiries to blehmann@pris.ca

CESSNA RT-459A TRANSPONDER, PART No. 41470-1028, SN 6993, 14V Unit, (for use in 28V aircraft use dropping resistor on mounting) Authorized release dated 11-Jul-13. Worked when removed for panel upgrade. Asking $600 obo. Comes with tray and connector. Estimated mailing cost $35. Direct inquiries to blehmann@pris.ca
Tail wheel assembly complete, New, off Rebel, also main wheels. $350 for all. Chris 1-866-733-8432

Avid 2-place taildragger, high wing, advanced ultralight, excellent flyer, always hangered, less than 200 hrs. on Rotax 582 engine, wheels and skiis, tundra tires - great on grass or paved runway, 2 fuel tanks for extended range, tow bar - wings fold for towing, can be hangered in single car garage. Must sell for medical reasons, asking $14,500 OBO. Come see this one at Oshawa RAA's Barnyard Flyin Sept. 9 at HawkeField (Orono,ON). For more information contact Don 905-436-3665

Cessna 150 Seats and Rails $400, Nice set of seats and rails. Covered in red vinyl. Chris 1-866-733-8432

2005 CESSNA/CYCLONE 180 FOR SALE
Due to re-injury of a lumbar disk, I have to seriously consider selling C-GLEH: Engine Cont. 0470R, McCauley Prop, both 310 hrs SMOH. Float kit, with heavy duty engine mount. King package: com, VOR w. glideslope, ADF & Garmin 295. Classic six pack flight panel. Leather articulating seats, extra light front seats & rear folding bush seats available. Fuel 74 US gallons, 6hr range. C185 landing gear held by full P.Ponk STC kit. 850x10 Cleveland wheels & double puck brakes. Airwolf oil filter & Airwolf oil-air separator. Bubble side windows, large extended baggage compartment for light but bulky items. A/C empty 1700lb, MTOW 2950. Price $96k OBO, or trade your homebuilt PA12(or equivalent) towards purchase.
For serious inquiries email: blehmann@pris.ca Aircraft based at CDC3, near Dawson Creek, BC

Partial kit for CH 701 STOL Wing Spars (finished), ribs, doors, struts, fire wall, dash board, rudder pedals, fiberglass wing tips, spring type main landing gear, bulkheads, some tubing for cabin frame …..and much more….. Asking $2,500 Located near Hamilton Ont. For more details please call: Rob (905) 484-0804 robtea2005@yahoo.ca
DAVIS DA-5A for sale. All metal Single seat "V" tail with A75 Continental engine balanced with two advanced magnetos: 68h SCMOH; airframe 142h TTAF since new. See RAA magazine article of Sep/Oct 2011 issue: http://www.raa.ca/magazine_pdf/Sept-Oct2011_ProofREV2.pdf. A joy to fly and priced only $ 16,000 (…which is less than price of bare kit: less engine, propeller and instruments! Rob (905) 484-0804 or Charlie (905) 928-7766 robtea2005@yahoo.ca

1960 Bellanca Cruisemaster 2555 TT 260 HP IO-470F A fast aircraft with good short field performance and triple tail style. Full size nosewheel suitable for grass fields.1000 mile range. Gami injectors, engine analyser,white polyurethane paint . Otherwise stock. Have paperwork to turn it into an amateur built.
$65,000.00 Richard 705-652-6307

C150 Engine Mount $450 Overhauled & painted by certified aircraft welder, O-200 to M model C150. Packaged and ready to ship. Chris 1-866-733-8432

Lycoming 0-290 engine. Comes with 6 bolt pattern prop extension, newly rebuilt carb, new gasgolator, starter, 680 amp battery, light weight alternator, cooling shroud, engine log and mechanics repair manual. ($10,000) Contact Norm at graham110@rogers.com for details.

King Avionics as removed wrkg from a 182. KMA24, KMD150, KT76, KY197. All guaranteed working. Offers? Chris 1-866-733-8432

ACEY DEUCY 2 seat open cockpit project. Fabric covering completed and painted. Engine Continental 0200A rebuilt with logs. New Warp Drive 3 blade ground adjustable prop. B and C Light weight starter and alternator. Full instruments and guages in rear cockpit basic flight instruments in front cockpit. Full electrics. Aluminum fuel tank. Radio included. ELT included. Gross weight 1230lbs. Estimated 50hours to final inspection. Asking $18000. Will sell only as a package. Many extras. 905-786-2482.

New In Canadian Skies

Bob Schauber's RV-9A

Send us photos of your completed projects !

Share your accomplishment with others - you've earned it! Please include a brief description of your aircraft and any other details you want to include, and send us a colour print or digital copy (preferred) with it.

Mail your material to the Recreational Aircraft Association of Canada Waterloo Airport, Breslau ON N0B 1M0 ...or **email us** the information and a high resolution digital picture (jpeg format please, and the bigger the better!) to ***raa@zing-net.ca*** or to art director George Gregory at ***gregdesign@telus.net.***

Ernest Kells did most of the work on C-GKEL and then Bob Schauber bought and finished it and took the plane through its final inspection. Bob Buchanan handled this and found a few snags that were quickly rectified, and this RV-9A had its first flight on Sept 27 2012.

C-GKEL is powered by a Lycoming O-235 N2C 118 hp with a light Ed Sterba 66 diameter x 68 pitch wood prop. The CG was initially a bit aft so Bob changed out the light Skytec starter and substituted a heavier one from a Cessna 172. The final empty weight is 1053 pounds. The panel is day VFR steam gauges.

Takeoff roll is 5-600 fpm, and climb during testing has been 900 fpm at 90 knots. Cruise is currently125 knots at a conservative 2000 rpms. The plane stalls straight ahead at 55 knots with a medium break. Bob finds the controls to be light compared to any certified plane he has flown.

Bob hopes to have flown off the 25 hours before winter so that he can enjoy flying to Sun and Fun next spring. Thanks are due to Clarence Beintema and his crew at Tri City Aero for all the help that they have given when he was prepping for the final inspection.

Chelton Flight Systems: 2 complete Chelton dual screen EFIS systems. 1 with crossbow AHRS one with GADAHRS. Serious offers? Chris 1-866-733-8432

CHINOOK Factory built in Edmonton 1983. Out of long term storage. Good sails in original color scheme. All oiled and inhibited for storage. Very low hours suspect < 20. VG 54" prop. $4990.00 OBO 780-460-6841 or cell 780-945-0411

FOR SALE: Advanced Flight Systems Engine information system. Some probes, fuel flow. $750 OBO. Chris 1-866-733-8432

Autopilot - 2 axis. Servos, control head. Etc from a 182 Serviceable. Maybe adaptable to a homebuilt? $500. Chris 1-866-733-8432

Teenie Two project, 1600cc VW engine test run, nearly complete, 2" wider cockpit, 6" longer fuselage, tubing motor mount, instrumentation complete, canopy with turnover protection, $7,500 invested, good buy at $5,000 306-764-2549 E-mail: williamfr@hotmail.com

1964 Corben Baby Ace . 600 TTAF. Recovered and TOH in 2000. A65. Metal Prop. Great flyer. Can be flown with ultra-light permit. $15000 Gary Wallace 519-223-0368 Hangared in Roseville, Ontario.

Corvair Engine For Sale. 1965 Corvair engine ser #T0131RH, 164 cid. Conversion completed in 2006 and installed on Pietenpol by previous owner. $2500. Price includes the engine, the engine mount [for Pietenpol] and the propellor [wood, 66" length and 30 pitch]. Located in Orangeville, Ontario. 519-925-3639. Patricia Jones-Bowman.

Stinson 108-3, a classic aircraft for sale. Airframe 2365TT. Franklin 165 hp engine 998 TT, 82 hours since top overhaul. Fabric in 2005, float kit, wheel pants, spare engine parts, 2 metal props - seaplane and cruise. 30K OBO. 250-991-7958 Quesnel BC.

Smyth Sidewinder landing gear legs with axles. Never used - free to good home. 519-648-3030 garywolf@rogers.com

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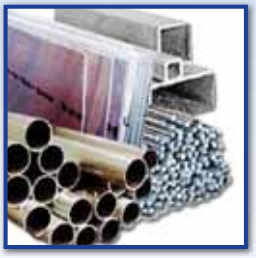
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