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RECREATIONAL FLYER

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The Voice of Canadian Amateur Aircraft Builders \$6.95



Mike Wiebe's

Falco





from the president's desk

Gary Wolf

THE YEAR 2006 BEGAN WITH A CARAC MEETING that was asking some unusual questions of the Industry, and RAA Canada attended to represent the interests of its members. There were several contentious issues, among them Builder Assist, and the possibility of changes to the ultralight and advanced ultralight categories.

The Builder Assist document was signed into being on April 23 2002, and it had few restrictions. The builder

builder oversight of the project, and to deal with the definition of mass production. Shortly Transport sent out a policy letter MPL 13 that defined mass production as the simultaneous construction by the same builder of more than one of the same type and model of amateur-built aeroplane, glider, rotorcraft, manned free balloon or airship. It is important to note that in every case the person who owns the project is considered to be the builder,

not the person doing the actual physical work. What was being judged as illegal was the simultaneous ownership of two of the same type

of amateur-built project. This would be taken as evidence that mass production was being undertaken. The concern was that a kit manufacturer might sidestep the certification process and use Builder Assist as a back door to selling finished aircraft.

In June 2005 David Moore and I attended another Transport meeting to deal with mass production, and at this meeting Transport's concern was primarily that anyone contracting out the assembly of a high tech airplane might end up with a complex machine, but he would not know enough to maintain it. The example given was a Lancair turbine pressurized aircraft. We responded that anyone with half a million dollars in loose change would not likely be trying to save the \$60/hr it would cost to have the plane ser-

viced by an AME, so we did not really see the problem. We also felt that the real test should be whether a safe aircraft was being constructed. It seemed strange that it would be perfectly legal for a rank amateur to bodge his way through a project like this, and that there should be no concern over that. The response from Transport was that these aircraft were being assembled under a mass production environment, and they intended to stop it on that basis. It seemed that they were confusing mass production with their real concern, that someone might end up with a complex aircraft about which he knew very little. The result of this very frustrating two day meeting was that they decided to let the CARAC group decide how to handle this.

On January 10th we were invited to the CARAC meeting in Ottawa to deal with several issues, builder assist among them. There was a new definition of mass production that was to be discussed and signed into use. Mass production would henceforth be the simultaneous ownership of more than one amateur-built project by one builder, and there was no longer any restriction that they had to be the same type and model. We objected strenuously to this wording because it would have immediately put many of us in breach of the regs. Transport apparently did not know that many of us own several projects at one time. I explained that for many builders it is the process that is important, not the finished product. We piddle about

Continued on page 36

We also felt that the real test should be whether a safe aircraft was being constructed

of an amateur-built was allowed to contract for professional assistance, provided the work was subject to the builder's overall control. The builder was solely responsible for evaluating and accepting the original aircraft design, and for any changes incorporated during construction. At that time one Transport official was asked how much of the actual physical work the builder would be required to do himself, and the answer was, "He writes the cheque." There was one caveat, that the aircraft could not be constructed under a mass production system.

In February 2004 David Moore, Wayne O'Shea, and myself were asked to attend a meeting to write an interpretation this document to further explain the responsibility for

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Features

NightHawk Tornado

A Canadian mod of a popular ultralight / by Gary Wolf..... 4

Pro and Con

Ken Armstrong weighs in on the debate..... 7

A 'Fine' Filter Conversion

Better AND Cheaper. by Bill Tee 10

Fishin' the Net: the Sequel

Dave King on how to use the internet to save Big Bucks 12

Over The Horizon, Part 1

Cross Country Tips from Curt Reimer 17

Mike Wiebe's Falco

The "Weebee" Airforce doubles in size / by Mike Wiebe 22

Flying With Ultralights

by Calvin Thorne 30

From the President's Desk

by Gary Wolf..... 2

Across Canada: Chapters in Action

by Don Dutton..... 19

Tech Stuff

Alternate Air / by Wayne Hadath 33

Terry Jantzi's Hole punch and inexpensive light holder ... 34

Gary Wolf reviews Princess Auto's Infrared

Thermometer Gun..... 35

Classified..... 38

New In Canadian Skies..... 41





Charlie Cetinski's

Nighthawk Tornado

TITAN TORNADOES ARE KNOWN as very fast ultralight-type aircraft from the USA. However a lot of work on Titans is being done in Canada, at Charlie Cetinski's field near Hamilton Ontario. His crew has been developing the Tornado for law enforcement and military surveillance work, and in the process they have produced a completely changed machine. There are two models - the police Nighthawk P for surveillance, and the military Nighthawk M with hard points for missiles.

The Tornado was originally a FAR103 Ultralight in the US, but it soon grew into a two place for the amateur-built category. A 4130 tube fuselage cage is married to an aluminum tailboom, with all flying surfaces made from aluminum. Unusual in planes of this category is that the Titan's wing is fully cantilevered. The cockpit of the original Tornado is a fairly tight fit for most pilots, the result of having been developed from a 254 pound single seat ultralight. Access to the rear seat is somewhat restricted, and the passenger has to put up with the aileron pushrods right in front of his nose, another holdover from the single seat version. Despite the inconveniently small size, the speed range and low stall speed of the Tornado made it the best initial choice for Charlie's crew. They outfitted their first

airframe with a 912 engine, and added hard points to the wing for a Wescam and a searchlight. The rear storage area was filled with electronics, and the whole plane was painted flat black for minimum visibility during night surveillance. This plane was meant to be an inexpensive replacement for a helicopter, and was used as proof of concept.

Realizing the limitations of the original airframe, the crew special-ordered a new Tornado S fuselage with stiffer landing gear, hard points on the fuselage, and no centre tube in front of the pilot's nose. Flamboro RAA member Jim Anderson is widely known as a master in composites, and he designed new fibreglass to replace the original aluminum bodywork. The fair curves of Jim's glasswork resulted in lower drag while offering much greater interior space. Ron Taborek is a former aero engineer and chapter member who

consulted on aerodynamic design. The clamshell canopy of the original was hinged on a centre tube that was always an obstruction to forward vision. The



Top: The front-hinged canopy of Jim Anderson's glass bodywork provides unobstructed access and vision. Bill Brubacher is booting up the Rocky Mountain panel here; Left, Rocky Mountain panel with collision avoidance eases pilot load.

new canopy is a one piece tilt-forward unit that offers access from either side of the front seat. Elbow room is greatly improved, and the pilot now has enough space to wear police-issue body armour without feeling cramped. The panel has an all glass Blue Mountain system, with an autopilot that can be programmed for a search pattern, leaving the pilot free to observe or to operate electronic surveillance equipment. This system is equipped with a moving map with terrain avoidance, to lighten the workload of the pilot.

Rear seat access is also now improved with a larger door, and the relocation of the aileron pushrod to the side of the cabin. The rear space is still a bit on the tight side, but it is much improved over the earlier models. Two full-sized policemen can fit in this plane with all gear. Behind the rear seat is a large storage area that is filled with electronics for the Wescam and the autopilot.

The wing on the Cetinski Tornado is unique. It has structure similar to previous Tornados, with foam nose ribs glued into a riveted D-cell, and aluminum everything aft of the spar. What is different for this particular plane is that it uses the Riblett airfoil from the Titan T-51, but with a hershey bar planform. Flaps on this wing are Fowler-type, and the ailerons are both mass and aerodynamically balanced. The Riblett laminar airfoil requires a completely smooth skin to the 40% point, so the flush pulled rivets at the spar joint are filled and sanded to prevent early tripping of the airflow. Bill Brubacher is responsible for most of the aluminum work on this plane, and everything is well-fitted. Fuel tanks are in the wing of this aircraft to allow the storage area of the rear fuselage compartment to be used for electronics. A pusher 912S engine is mounted at the rear of the wing, and a fibreglass cowling fairs it for better speed and cooling. The speed range of this plane is impressive - stall is at 37 mph and cruise is 150, with Vne at 180. The normal surveillance speed for a car chase would be in the 70-90 mph range, so the Cetinski Tornado has a pretty easy time of it in this mode.

Charlie's crew has also been working on a turbine powerplant which is much superior to piston engine in every aspect except fuel consump-

The wing surface has had all rivets filled for laminar flow with the Riblett airfoil



CHARLIE CETINSKI began his flight training in Orangeville Ontario, did his Commercial in Guelph, and completed his IFR training in Naples, Florida. He has flown a number of interesting aircraft including Cassutt Formula 1 racer, Grumman Goose, Aerostar, Paris Jet, Lake Amphibian, and an AirShark amateur built.

Charlie has a strong electrical engineering background and consulted on the electronics for the Highway 407. He was also project manager for Markham Hydro when they set up a dedicated electrical generating plant to ensure that IBM would have an uninterrupted supply for their facility in that city.

The first flight of Charlie's AirShark resulted in a crash, and this put him into a wheelchair. Many of us would have retired to a back room and watched television, but not Charlie. He spent a year recovering, but never regained the use of his legs. This was a small hindrance to Charlie. He bought the best wheelchair and outfitted his van so that he could load and drive without any assistance. In 1999 Charlie organized the Golden Horseshoe Marathon which runs annually from Niagara Falls to McMaster University, then to Queen's Park in Toronto. Competitors use standard wheelchairs rather than long wheelbase specialized racing models. All funds are donated to McMaster University for stem cell and spinal cord research. www.goldenhorseshoemarathon.org



The larger rear seat is evident here. Electronics fit in the rear compartment. Note the aerodynamic shroud over the 912S

tion and cost. Much work has been done to correct this, and modern turboprops are beginning to approach the efficiency of piston engines. Charlie and crew have already started on prototype #3 which will have a 100 HP Garrett turbo prop for power.

One of the reasons to expand the bodywork of this Tornado was to be able to carry surveillance and autopilot equipment. John Van Hattem did most of the electronics installation, and Mike Crutchlow handled the programming. The Wescam system is equipped with a real-time satellite downlink to a stationary or portable base station. The pilot has a glass panel with one-quarter of the display devoted to the output from the Wescam, so that he can

ensure that the police or military on the ground are receiving useful information. In this application the Wescam can even see through cloud, so the procedure is to lock onto the target and then climb into cloud to remain out of view. All of this takes a lot of electricity, so the Nighthawk surveillance airplane has two independent electrical systems: there is the usual 12v to run glass cockpit, landing/position/strobe lights, fuel pumps, auto pilot, flaps, aileron/elevator/ rudder trims, electric constant speed prop, fuel flow/and electronic fuel level sensors in the fuel tanks. Additionally there is a 24v system to run the surveillance camera, the search light if so equipped, the micro wave down link and satellite

up link. In case of a 12v system failure, 12 volts may be tapped off from the 24v supply, so that the plane may return to base.

The pilot of the second version of this plane has the option of using the autopilot and programming it for a set search pattern. This leaves him free for other surveillance work. As well, the base

unit on the ground can operate the plane like a large radio-control model, and has full access to all of the panel data. The Nighthawk M may be armed with two missiles capable of neutralising hostile enemy targets. With satellite uplink human pilot is optional, the airplane is able to take off, fly the mission, send pictures back real time for analysis on the ground and return back to land. His weight allowance could allow eight hours of fuel to be carried. Low level surveillance is a high risk operation and the military is reluctant to send its pilots in harms way. In this case it would be totally unnecessary as the pilot on the ground sees everything a pilot in the airplane would see, but with greater clarity and range. As well, the ground pilot remains calm throughout the operation because his life is never threatened. If the airplane were shot down there would be loss of equipment, but no loss of human life.

As the second prototype nears completion, the fellows are already preparing for the build of the third version. This turbine plane is again based on the Tornado but with each iteration Charlie and his crew are adding more innovations, making it more Cetinski than Titan. Drug smugglers and other undesirables had better watch out! **RAA**

The Airmaster prop and engine fairing contribute to the speed range of the Nighthawk



Pro and Con

Choosing Between Certified and Amateur-Built
by Ken Armstrong



For decades, I've expressed my opinion that owning an amateurbuilt is far preferential to a factory built certified aircraft. (This from someone whose current plane is a Diamond Xtreme motorglider....) My ownership of this non-homebuilt is really a matter of instant gratification as opposed to a preference – as my desire to begin soaring immediately overcame the thrill of a decade of construction. While I love my soaring machine, I would still prefer an amateurbuilt – perhaps a Europa motorglider. Why?

There are many reasons I have espoused before and they include: lower purchase, operating and maintenance costs. One can also make "improvements" to aerodynamic efficiency and modification readily with amateurbuilts. The ability for the most part to accomplish the maintenance tasks on your own plane is also beneficial in many ways. I could go on but would likely be preaching to the choir in most instances. Of course, readers are reminded they can make willy nilly changes to a homebuilt that are considered major without Transport approval. Major changes include a different propeller, modified exhaust or ignition system and lots of other "improvements" that are seldom reported. That is until one is attempting to make an insurance claim after an accident when unapproved modifications could void your coverage!

Instead I am going to play devil's advocate and mention all the negative factors associated with Amateurbuilts compared to Certified aircraft so your selection will be completely informed. It's not an attempt to rile my fellow builders or kit suppliers but an attempt to maximize your safety and long term pleasure prospects through deeper thought. If you are building a homebuilt for recreation and education, you are on the right track. If you are considering construction to maximize the bang for the buck, then consider certified and a second job.

Certified Safety

The word certified is more significant than builders might want to admit. Although homebuilts fly under a Special Certificate of Airworthiness, they do not necessarily meet the standards of certified aircraft. For the most part, those factory machines are safer and structurally more sound – generally speaking. While there are some amateurbuilts out there that go beyond factory certification requirements – they are few and far between. Can you assess the differences between the offerings? Few prospective purchasers can. As an aviation expert witness I commonly see court contestants slamming kit manufacturers for deficiencies in their kit aircraft and watch the manufacturer "walk" when it is established they did not have to meet the same criteria as certified aircraft. Besides, under the law, they are not the manufacturer of the aircraft, the builder is – and it typically says so on the registration i.e. Aircraft Type – Johnson Sidewinder, Builder - W. Johnson. So when you build an aircraft you have little recourse with folks who supplied the kit as the problems may have been created by the builder/owner. Besides, most of the kit companies will have you sign a waiver before delivering the boxes wherein you acknowledge the aircraft does not meet certified criteria for airworthiness or material and you are building at your own risk and accepting all operat-

ing responsibility. This means, if there is an accident, the designer/kit manufacturer won't likely be liable for deficiencies - you will as the owner/builder.

If you own a certified aircraft you will be on lists for Airworthiness Directives, Supplementary Bulletins, Service Letters and a host of information that the country of registration must pass on to you. It is much less formal for homebuilts and ultralights so, buyer beware. It is common for a recreational pilot not to be aware of AD's against his homebuilt or U/L as they are not on the applicable mailing lists. If you bought one of the popular Wheeler Express four-place kits - as many did - you likely got only a portion of the kit when the company folded. While there were after market modifications and additional start-ups by companies that took over the design, they all came to grief. Many folks lost a bundle on these aircraft because there was no one left to provide parts! Other companies that had been very successful selling hundreds of kits such as Bede and Europa USA also failed financially. It's not an uncommon phenomenon. In my book the recommend tip is to save up to buy all of a given kit at once to avoid the dilemma of ending up with a partial kit and no options.

Parts can be a problem for amateurbuilts. Many of the companies are transient and similar to desert plants in a drought, their parts supply dries up and they drift away in the winds. This is less likely with the more popular selections because a bankrupt company or death of the key person will



If you are building a homebuilt for recreation and education, you are on the right track.

generally result in someone else taking over. Still, don't consider this glitch an unlikely event as less than 50% of the kit companies from ten years ago are still in business today. Thus, there are no promises that parts will be available in



With amateurbuilts, you can make many modifications - with approval, of course.

the future for your aircraft. With certified machines, by law, parts must be produced for years after production line assembly ceases and there are generally so many aircraft produced in factories that wholesalers, "bone yards" or surplus vendors will be able to source components for decades. For instance, well over 10,000 Cessna 172 Skyhawks were produced and it is unlikely that the supply of parts will "dry" up in our lifetimes. Surplus yards commonly do not buy homebuilt carcasses so it is unlikely that many of the airframe parts will be available for rebuilds.

Who does the maintenance on an aircraft is a grey area for many. There have been so many changes in airworthiness/maintenance procedures and regulations recently that I would venture 90% of us are not entirely aware of the requirements - or are wasting money by following procedures that are no longer neces-

sary. Yes, owners of Canadian registered amateurbuilts can conduct their own maintenance and inspections - whether you built the aircraft or not. However, is it prudent? For many knowledgeable owner/builders, they will do a better job than an AME who is not familiar with the type. However, for many others who skimp on inspection time or materials costs or simply don't know the systems of their purchased aircraft, they may be in fact signing off their own hospital visit when they sign off their homebuilt. Being forced to have a second set of AME/mechanic eyes looking at your aircraft as required for certified aircraft may be a wise insurance policy. While most amateurbuilders could easily employ qualified inspectors to check their work, most don't.

For the certified folks, remember also that it is perfectly legal for you to accomplish virtually all of the yearly inspection on your factory built machine - just like a homebuilt - as long as a qualified AME supervises your efforts and signs off on your work. This can bring the inspection costs down considerably. Mind you, not every engineer will permit this cost saving measure.

Aircraft as an Investment

Generally, amateurbuilts do not appreciate in value compared to new certified aircraft which escalate steadily after the first five years or so of depreciation. For instance, a 1975

Cessna 172 that sold for \$20,000 when new is now likely to sell for more than twice the price. Great investment eh? No, not actually – because the value of the dollar’s purchasing power has devalued to less than 20% over that time period. Therefore the same 172 selling for \$50,000 today will only net the seller less than \$10,000 effectively. (It’s still a much better investment than most cars.) Still, few homebuilts will do as well monetarily and in fact most steadily loose value through time. Look what happens when an owner moves a Cessna from the Certified category and goes into the Owner Maintained registry – what the value quickly plummet. While there haven’t been a lot of pristine aircraft make this transfer, moving the factory machine into the smaller marketplace significantly reduces the number of future buyers because most pilots look at homebuilts with a jaundiced eye. (Essentially, we’re smarter, but the majority doesn’t know that.....)

Amateurbuilts, like this gyro, often do not meet design criteria demanded of certified aircraft.



Consider the World

For the pilot wishing to tour the world in his pride and joy, the broad acceptance of a certified aircraft will gain you easy acceptance to most countries. Whereas, amateurbuilt aircraft are accepted in relatively few nations as they are not legal within their boundaries.

Moreover, parts supply on long trips can be problematical. I wouldn’t want to be looking for a Europa motorglider propeller governor in India – compared to locating one for a Cessna from a local dealership. (On that note Europa USA folded its wings a year ago and my dream plunged into wreckage.)

Educated decision-making is my goal. An informed selection between a certified or amateur-built aircraft will minimize hassles and maximize the pleasure of flying. Pick the type and category of plane that works for your needs and be prepared for the long term pros and cons. *RAA*

Copies of the author’s book, Choosing Your Homebuilt, The One You’ll Finish and Fly are available for \$40 at 709-6880 Wallace Drive, Brentwood Bay, BC. V8M 1N8

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A 'FINE' FILTER CONVERSION

By Bill Tee

THE FOLLOWING ARTICLE is meant to relay one person's successful answer to a nagging question about how to improve the oil filtration of your small Continental aircraft engine.

If you are tired of the standard sieve straining only the larger lumps from the oil in your engine and want something better then here is something worth considering.

As you probably already know there are remotely mounted filter conversions on the market. Not only are they very expensive but require new oil lines to be added. More hoses are not what most of us want. They are expensive, at times develop leaks, need periodic replacement and their bulkiness takes up a lot of room right where there may not be a lot of room available.

It is little known that years ago Continental equipped Cessna 150's were going to dusty and sandy Egypt with a full flow filter system. You can bet it would be expensive!

FM in the USA currently produce a similar product to this while El Reno also of the USA produces a full flow oil filter adapter which cantilevers off the standard oil cooler take off mounting pad.

Like a mouse trap, someone is always trying to come up with something better. By that we in aviation mean something lighter and cheaper that does not compromise safety and reliability.

Steve Brown and Mike Roper, Veri-Eze owners in the UK, decided to do some research into something that would be practical for their aircraft – light weight, economical and effective. Their curiosity and research led them to a device submitted to Rutan Aircraft Factory by American Gary Hertzler. Gary's submission was effectively sanctioned in the October '89 issue of Rutan Canard Pusher publication.

A drawing and a summary of how it performed was subsequently obtained. Gary's basic design was followed with a few personal modifications made to install a full flow cartage oil filter to the O-200 engine in the Veri-Eze.

This modification is suitable for the O-200 and C-90 and probably with suitable alterations the other flat Continental

engines with no alternator or a B & C type mini alternator fitted and that use the same screen system. It may well physically clear the standard huge and heavy Continental generator or alternator but this installation has not been tried by the authors of my research article.

The purpose of the modification was primarily to improve the filtering of the oil to the engine and thus reduce engine wear caused by the oil borne particles passed by the original course mesh oil screen.

In addition a by-pass valve incorporated in the selected cartridge filters operates if the paper element becomes blocked. This adds a level of safety to the engine that did not exist before. Also an anti drain back valve is built into the cartridge filter which means that positive oil pressure can be achieved more quickly on start up.

Photo 1 (above) shows the standard Continental engine accessory case, oil screen housing and the redundant brass oil screen.

The adapter screws into the oil screen housing wholly replacing the screw-in brass oil screen and is tightened with a suitable wrench.

Since the oil temperature sender / steel adapter normally screws into the brass oil screen brass mounting boss an alternative position had to be found. The oil screen's raised boss was therefore drilled and tapped 5/8" x 18NF to take the standard steel adapter and sender unit [the brass adapter shown at 'A' was not used].

One benefit of this methodology is that the temperature sender and wiring need not be disturbed when the full flow cartridge filter is replaced.

The adapter itself was machined and threaded from 6061-T6 aluminum alloy using smooth radii at all junctions.

The adapter requires a permanently attached 3/4 x 16UNC threaded steel hollow screw for the filter to screw onto.

Rather than making their own these clever gentlemen sourced this item from a used standard Champion CH48110 aviation oil filter canister. The flange was carefully cut in

G-VEZE Full Flow Oil Filter Adapter - Ground Run Test Data

Before Fitment of Adapter

Date	13/11/2004	OAT	5 deg C	
Real Time	Cumulative Time	RPM	Pressure (Oil Screen)	Temp (Oil Screen)
32	0	0	0	15
34	2	1050	45	15
36	4	1060	43	15
38	6	1060	43	18
40	8	1060	43	21
42	10	1070	43	28
44	12	1080	43	33
46	14	1040	42	43
48	16	1070	41	50
50	18	1070	39	57
52	20	1050	37	64
54	22	1080	33	69
56	24	1050	31	73
58	26	1080	28	75
60	28	1070	26	78
62	30	1060	24	81
64	32	1070	24	84
65	33	1540	31	84
65	33	1810	33	84
66	34	2430	39	84
66	34	1050	20	84
67	35	810	15	86
67	35	1080	19	87

After Fitment of Adapter

Date	17/11/2004	OAT	11 deg C	
Real Time	Cumulative Time	RPM	Pressure (Full Flow Filter)	Temp (Full Flow Filter)
0	0	0	0	15
6	0	0	0	15
8	2	1080	42	15
10	4	1020	42	20
12	6	1030	43	25
14	8	1060	43	33
16	10	1050	43	40
18	12	1070	42	48
20	14	1060	41	53
22	16	1050	39	59
24	18	1040	39	65
26	20	1030	37	70
28	22	1050	35	72
30	24	1060	32	76
32	26	1060	31	78
34	28	1050	29	79
36	30	1060	28	79
38	32	1070	26	82
38	32	1570	33	81
38	32	1800	37	83
39	33	2460	40	84
40	34	1050	22	85
40	34	770	18	85
41	35	1080	21	84

such a way as to avoid any damage to the threads. As they said, a genuine aviation part for free!

Photo 2 shows the adapter, the steel screw [shown here loosely inserted the wrong way around – the stub end that screws into the filter is longer] and the filter canister.

While we do not have to seek authorizations as the Brits do for an amateur built aircraft it is good thing to follow what they have approved as it has been proven. The only filter canisters approved by the PFA are the Champion C136 and C134 automotive filters since they include the previously mentioned filter element by-pass and anti drain back valves. The adapter is sealed to the oil screen housing by the standard Continental copper / fibre gasket, while a AN6227B-24 ‘O’ ring provides the seal within the accessory case. The adapter and oil filter are both wire locked in place, the later by using a stainless steel worm drive clamp around the filter.

Photo 3 and **photo 4** show the whole assembly in place from below and from the port side in this pusher configuration.

Before the adapter was installed engine oil pressures at varying oil

temperatures and RPM were noted and recorded during a ground run


After the installation of the adapter and checking for leaks the post mod data was compared to the pre mod temperatures and pressures.

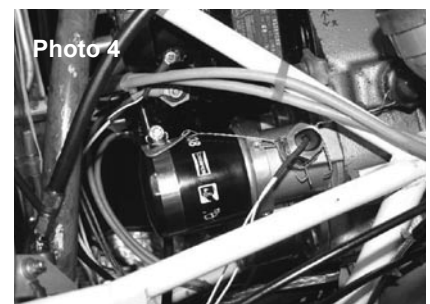
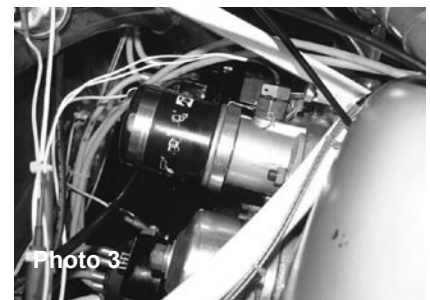
Data and **Graph 1** shows both pre and post mod ground test results and it clearly shows that the full flow oil filter provided a healthy increase in oil pressure of between 2 and 5 PSI at different RPM. This is attributed to the larger cartridge filter surface area [750 sq.cm. versus only 65 sq.cm.] despite the much finer filter mesh [10 to 20 micron].

A PFA permit to test was issued in October 2004 and full approval was obtained in November 2004.

Since then the installation has performed flawlessly in Vari-Eze G-VEZE. and the owners are convinced that the engine is benefiting greatly from this change.

I wish to thank Brian Hope, editor of Popular Flying, and authors Steve Brown and Mike Roper for granting me permission to use information and photos from the original article in the August 2005 edition of Popular flying.

Happy flying! 



Fishin' the Net: the sequel

Using the Internet to cut the cost of flying

The last time we talked about using your computer for finding things on the net. This time we will talk about using it and saving a few bucks.

By Dave King

As builders, owners, fliers or the poor guy stuck doing maintenance we all know that airplanes cost money to fly. They burn gas, they leak oil, and they break or wear out. Some of this such as the cost of gas we won't be able to do much about. However, we can with a bit of luck and patience drastically cut the cost of some consumables, repair or airframe parts and just about anything else up to a complete 747.

THERE ARE A COUPLE OF PLACES that you should look at when you want to buy things. One is EBay and the other is Barnstormers. EBay is of course the infamous on-line auction house where you can buy anything from engine oil to paint and the odd rumor of a human kidney. Barnstormers are more along the lines of the traditional want ads in the newspaper. Both of these will let you browse for free and see what's available. Other sites are out there such as Trade-a-plane but you have to subscribe i.e. pay to see the ads. If you are selling this can be important, as a lot of people won't pay when there are free places to sell things.

So lets start with EBay. EBay is an on-line auction house. You can buy items by means of bidding just like a normal auction. You can also sell an item and only be charged a modest fee. Anyone with an Internet connection and a web browser has access to EBay so you can buy and sell to people from all over.

If you are wondering if this is really worth it or you just don't understand what the big deal is, it's simple: you can save a bundle. With a bit of work

you can easily pay for a few hours of extra flying time. Here is an example, aircraft spark plugs. Everyone who owns a Continental or Lycoming will be able to tell you the exact price they pay for spark plugs. Ask them how much a complete change is worth and they will start fidgeting, especially if their wife is within earshot. If they won't admit it, \$30 per plug is not totally out to lunch these days for price. Now if I were to tell you I paid \$11 on EBay you would probably think "Hey, that's not too bad". And you might think if I could buy 8 plugs that would save \$152. That's pretty good right? Well what if I told you I paid \$11 for 38 brand new in the box spark plugs? I paid about 29 CENTS each plug. My cost to change all 8 plugs will be only about \$2.31. Have I got your attention yet?

Now before you borrow the wife's credit card and fire up the computer we need to make sure you have a few ideas down firm. Unlike where you might have heard me say, "Google is your buddy", EBay simply put, "ain't". People who sell items on EBay are selling them to make

We can with a bit of luck and patience drastically cut the cost of some consumables, repair or airframe parts

money. Buying an item is not going to be like going to your local FBO or parts place and grabbing a part. You have to know what you want to make sure that's what you get as a lot of the times the person selling is just cleaning out dad's old junk and has no clue. My auction spark plugs were from this type of situation. The fellow was happy to sell them as he thought they were old junk and I was on the happy side a bit too. I knew what they were, I asked about part numbers and he had a picture showing both the condition (sealed and the original boxes) and the part numbers.

Generally once they have your money you have no recourse if the item is less than what you paid for so the idea is to not be any hurry. That gives you time to check things out. And there are several things you do need to check out. Just about any horror story you hear about EBay is the result of seeing what is believed to be a smoking deal and yet no-one has bid on it, so panic sets in and the person just bids until he ends up with the item.

The first thing is simply don't panic. Caveat Emptor, Buyer Beware, let sleeping dogs lie etc etc. And what I am really saying here is, there is always another deal like it. They do make more than one spark plug, oil filter per year so you don't have to get it. You can wait. If you have to have it that bad, order it from a normal supplier. It might end up to be a lot cheaper. So give the wife back her card and read a bit more.

This might seem rather obvious but simply is this what you need? Not only do you need to make sure it's the right part but also that it is in

the right condition. For example you wouldn't buy used piston rings or bearings so now is the time to make sure they can be used. Unfortunately there are people on EBay who will sell you their junk. Sometimes they don't know, other times they are just plain dishonest. Your best defence is just knowing enough about your part to be able to ask a few questions. If something doesn't sound quite right or you are not sure, don't bid. Wait for the one you are sure about.

What is the part/item worth? What can you buy it for? When you win the bid and buy an item you pay for the item, and you pay for shipping and taxes. If the item is in the US then you will also have to pay exchange rates. If you use a credit card or other service you also are going to pay fees for that. All of this has to total less than what you can buy it locally. The idea is to save money so add up every cost you might incur.

There are of course fees you normally wouldn't think about. Personally shipping and handling are the two biggest abuses on EBay. Again some is unintentional but some definitely is close to fraudulent. An example is a lot of sellers try to give the impression they are a store or some kind. They might claim to only ship once a week. What they may be doing is taking advantage of shipping an item by UPS. UPS picks up items, but you have to drop stuff off at the post office. This is fairly common in the US where the UPS rates are fairly cheap. If the seller is located in the US or anywhere else outside of Canada ask them if they will ship by the US Postal Service (USPS). If they will only ship by UPS, you need to consider that UPS will

charge \$25-\$50 assessment fee plus the duty it figures you owe. If you are used to how Canada Post/Customs does this you are in for a shock. They will not charge if the value is low, UPS will charge regardless of the value. I have had commercial samples arrive with a \$40 assessment fee. I could have bought these parts for \$2 if they were available. UPS will charge regardless of the stated value. I have never had items shipped UPS show up without this extortionate fee being tacked on. The other problem is when the seller does not say how much for shipping and handling. Sometimes this is an omission, sometimes it's not. Email them and ask if they will ship to you and how much. A spark plug will still weigh the same if you pay \$1 for it or \$10. Unscrupulous types selling items will try and make their money on shipping and handling.

For instance one thing that recently happened to me was my wife won a bid for a book. The seller told her that shipping was \$4.95 US. This person was located in Vancouver B.C. about 100 miles west of me, and the last time I checked neither of us were located in the US. So she asked if that was US or Canadian dollars for the shipping to make sure. This is another minor way some sellers pump up the sale by charging US funds even to other Canadians.

This character writes back and says he was looking at the wrong auction and that the actual shipping was \$39.95 US! That is \$47 Loonies to ship a 2-pound book not even 100 miles. Canada post showed that the rate should be between \$8 and \$11 CDN. Needless to say we haven't paid it.

Checking out the seller is not that hard. It won't tell you everything but it will give you an idea. The fellow I just mentioned had a bit of a history of charging people excessive shipping. We violated the "don't panic to buy" rule because the auction was ending and we bought the book for a penny. How can you go wrong you might be thinking at this point? Now you



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know. Had we checked this guy out we wouldn't have touched it. He had a history of doing this, and one example was charging a guy \$20 shipping/handling to pick up the book. Checking is easy and should be done before every purchase.

Near the upper right hand side of the page is a box titled "sellers information" and in it are the sellers name and a number enclosed in brackets. Simply click on the number and it takes you to

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the seller's report card. First thing, are there any negative ratings? If there are it doesn't always mean they are a risk to deal with. If you ask anyone who works at a store selling to the public, they will tell you there is always someone who just isn't going to be happy no matter how hard they try. So keeping this in mind, are there a lot of recent negative comments? Do the comments sound alike, that is, are the people complaining about the same thing? Do the complaints sound rea-

the person leaves you hanging if the deal is a rip off as it bypasses the eBay protection. The majority of eBay sellers do take Paypal so it really should be all you need and should use. Unless the part you need is really needed and worth a bit of risk this is another of my personal walk away signs.

To get a Paypal account you simply go to www.paypal.com <<http://www.paypal.com/>> and create an account. You will be asked for various bits of information and asked to verify the

you competitive.

One of the first things you need to watch is the time left. You need to make sure of when it ends. Sounds like a no brainer but when the auction ends at 0700 Eastern Time and you are on the west coast, and are thinking it ends at 0700 Pacific Time you are probably not going to win that one. The time also makes a difference on how many bids. If it ends in the middle of the night or over lunch or dinner the other guy might get distracted enough to miss it or be sound asleep.

One thing I do about 3-10 minutes before the auction ends is to place a single bid. What I am looking for is to see if someone has put an autobid on the item. An autobid is a bid that automatically will increment the bid in response to other bids up to a maximum amount. If the item has a bid at \$2 and the next bid amount is \$3 then and I put \$10 in my bid amount then if someone else bids \$3 or \$4 my autobid will counter with the next higher amount in this case \$5. It will do this right up to my maximum level of \$10. So if someone bids \$11 they get the bid and I am done. When I use autobid I will set that maximum amount to what I think the item is worth. So if I figure the most I am willing to pay is \$10 this stops me from getting carried away.

Now if someone has an autobid placed the chances you will win the auction item are a bit less. So if this is the case you need to re-think if you really need the item now. Chances are now you will pay more than you need to. If the amount is still below your no-go bid point then it's worth a try. If you don't win or decide not to bid the nice thing about eBay is that you are almost guaranteed to find the same thing in another auction. Usually when I am looking for something unless it is pretty special I will be watching several of the same thing being auctioned. So again don't panic.

Now if there is no autobid, it is time to rub your hands in glee and get ready for the hunt. Unless you have a spot of bad luck, such as internet

If you are wondering if this is really worth it or you just don't understand what the big deal is, it's simple: you can save a bundle. With a bit of work you can easily pay for a few hours of extra flying time

sonable? Now one other thing I look at that I give more weight is how does the seller respond: are the responses smart- assed getting back at the person remarks or are they trying to explain things? They don't have much space to complain or reply so these can seem rather blunt. This is a judgement call about someone you are giving money to and who might be a few thousand miles away. So be cautious.

So now that we know what they are buying and think the guy is ok to deal with, we now need to know how the heck do we pay for our treasure? There are several ways to pay and again some safer than others. I use Paypal. I transfer money from my bank account or credit card into Paypal and then use it to pay for the goods. Paypal transactions are somewhat protected as they are owned by eBay. There are other similar services such as Bidpay, which are not protected by eBay. And paying by credit card, cash, and money order direct to

account. You will need to charge up the account with money. You can do this with a credit card and I believe even sending in a money order to Paypal. Of course the credit card is the fastest by far and gives you the added protection of your credit card company if something goes wrong. This isn't as easy as it is to do south of the border due to our banking laws. Be prepared by having your money in the Paypal account before you bid on anything. Go to Paypal setup your account, verify it and put some money in it and wait. We ain't done yet.

So now we have our money ready, we have our eBay account setup, and we've checked out the item, the shipping and the seller. Now all we have to do is win the bid. Now I'm not going to give all my secrets because there are thousands of you and just one of me bidding and I'm cheap so I don't want to bid more for something than I have to. However I'll be nice here and give you a few hint to make

You have to know what you want to make sure that's what you get

problems, or there are a lot of people bidding quickly driving up the price you have a better than 75% chance of winning the auction. I mention the internet problems as I have had the net drop me or slow down just as the time ran out. Slow is bad, as you will need a quick responsive connection to eBay to make things work for you. If you are on a dial up connection you might lose a few auctions because it takes longer for your bid to get recognized. What we are going to do is called sniping. That is simply putting in our bid as late as possible. Now part of the trick to doing this is putting in an autobid as late as possible. I will place my bid with maybe 5-10 seconds left in the auction. By the time anyone else sees my bid they don't have time to enter in a new bid and I win the auction. Or if they bid a bit higher my autobid will hopefully jump above what they bid. If I have guessed wrong on the maximum amount I won't win, but I won't overspend either. And within a minute I can be searching for another auctioned item.

The other part of the trick to doing this is to have two browser windows open side by side on your screen. One is for watching the progress of the auction and the other is your bid window. In the bid window you will have your amount all ready entered and are at the last confirm your bid page. At this page when you click

and confirm that you want to place the bid, the bid gets entered into the system. Until you do that your bid isn't recognized by eBay. So all you need to do is keep watching the other page which you need to refresh or reload. On windows based machines using Internet Explorer you do this by hitting the F5 key. Keep an eye on the bidding and the time. When you get close to the end you just need to hit the confirm key in your bid window. No typing or anything else that takes time or might need to be re-entered if you make a mistake. One click and it should be all yours.

That's about it for eBay. It's more about protecting yourself than you might think. It can be a lot of fun if you are careful. And it can save you a ton of cash.

- Check out the seller
- Check the item and set a limit for your max bid.

- Check the shipping.
- Don't bust your limit, that just costs you money.

- Add all of the costs to see what you really will be paying.

- On eBay, sniping is your buddy (all's fair in love and war).

- If you have a hunch something doesn't seem quite right don't bid.

- If you have problems with the seller click on help and see if it is something eBay can fix.

Barnstormers.com

As an alternative to eBay you can also find good deals on Barnstormers. This is a simple want ad website to buy and sell. What is nice about it is that it only deals with aviation items. You can also find anything from spark plugs, plans, and complete airplanes of every type in all conditions. It can be found at <http://www.barnstormers.com/>

Barnstormers is organized by type and manufacturer but the best way to find things is by clicking the search ads button. When you find the item it should have contact information - either a phone number or email address. Since this is not set up as an auction you won't be able to use any tricks to gain an advantage. You are going to have to do something most Canadians find kinda weird. You are going to HAGGLE. That's right, you are going to make offers on the price and not just pay what is asked. Don't forget the seller is going to ask as much as he dares get away with. Too high and everyone walks away, too low and he doesn't get his money out of it or people wonder what's wrong with it. Some people will not budge and some will. And it doesn't hurt to ask. You can always pay full price but if you don't have to, don't.

The downside to Barnstormers and other adverts is that you really don't have much protection on your purchases. Unless you can use a credit card to pay for the item there really isn't any. At least with most credit cards you can get the card company to charge back the price if you complain to them about it. The upside to Barnstormers is that you have time to choose and research the item. Unless someone else buys it the adverts don't usually expire. Generally the people are fairly good about what they are selling. You usually won't find the screaming hot deals like you can on eBay but you should still be able to save some money.

That's about it for this time. There are other auctions and other website that you can buy and sell on but those are the better known ones. If you are careful you might just save enough money to do a bit extra flying and that's what the game's all about. **RAA**

After a lengthy delay at the gate while waiting to depart, the Captain finally came on the PA system and announced: "I'm sorry for the delay, but the machine that smashes your baggage and removes the handles is broken, so the ground crew is having to do it all by hand today!"

Over the Horizon, Part 1

Cross Country Tips
by Curt Reimer

Calvin Thome



NO DOUBT, THE ART and practice of flying airplanes is certainly one of life's great pleasures. My flying experience has passed through several distinct phases, each with its own challenges and rewards. Learning to fly was the first big commitment, and a lot of fun it was. Building and test flying my own aircraft was another big step and thoroughly rewarding. Lately, and I suppose logically, my favourite mode of flying is cross-country. Not just the minimum 25 miles for the logbook, but trips of several hundred miles or more, encompassing new landscapes, people, cities and the inevitable complexities of operating into unfamiliar airports and arranging for overnight accommodation.

Sounds intimidating? It is, at first. Striking out for a distant city can be as frightening as it is exciting. Just to be a pilot at all requires a certain amount of faith in the reliable functioning of one's aeronautical machinery, as well as having the skill and confidence to guide the craft around the patch and safely back to the ground. Cross country flying can involve crossing mountain ranges, detouring around frontal zones and negotiating complex foreign airspace among other new considerations. For me, the biggest hurdle to getting started was the fear of so many unknowns. There are some good books on the cross-country experience, including anything written by Frank Kingstons-Smith, but many of these are getting dated and less relevant to the current technical and political aviation scene. In this article, I hope to share some of

the basics I have learned through my first few years of cross-country flying so that other pilots just striking out on their first big trip can have a few less things to worry about.

The Economic Proposition

(okay, it's a stretch...)

Back when I was renting airplanes, a trip of any length was an expensive indulgence. At a hundred dollars an hour, the out of pocket expenses for a trip of even moderate length - say, to Calgary - were difficult to justify. I only made one such cross-country flight as a renter before deciding to focus my finances on completing my RV-6. Not that aircraft ownership is really any cheaper overall - any owner has to live with significant annual costs for maintenance and insurance. But a curious mathematical advantage exists for us owners: the more we fly, the cheaper it gets! (on a per-hour basis, of course). When just oil and gas are considered, trips across the country actually start comparing favorably with traveling on the airlines. That assumes you are filling all of the seats in your airplane of course. It also helps the comparison if you aren't traveling between two big cities where high volume, discounted airline flights are available. But we are at least in the same ballpark, cost-wise, as buying an airline ticket, and since we bought the airplane to fly, why not?

The Schedule

Well, perhaps I should answer that question by mentioning when

not to consider traveling in your own airplane. This is probably the single most important safety message of this article, so let me say it clearly: DO NOT TRAVEL VFR IN A LIGHT AIRCRAFT IF YOU REALLY, ABSOLUTELY NEED TO ARRIVE SOMEWHERE AT A CERTAIN TIME. Safe VFR cross country flying requires a lot of flexibility in your schedule. In fact, it doesn't hurt to have some flexibility in your ultimate destination too! There is just no way to travel half way across the continent and back without running into an active weather system or two. You need to build some "weather time" into your itinerary. Depending on the season, I plan on at least one day of weather delay for every two days of air travel. That works most of the time, but there are no guarantees. IFR weather can settle over an area for days. It doesn't happen often, but you need to accept that it might. At the very least, you are going to spend a day stuck on the ground from time to time, no matter how fair the forecast when you depart.

You can still book that three-day weekend at Disney World or that baseball game in Chicago, provided you allow extra time to get there and back and are prepared for the disappointment of having to cancel if your luck turns bad. Often it is possible to have a backup plan - perhaps driving if the distance isn't too great, or finding a last minute deal on an airline ticket.

When planning a vacation trip, I like to plan a visit to an area, rather than a single specific city or resort. That area might be southern Ontario for example.

Once I get into the general area of my destination, I can always park the aircraft and rent a car to get around if the weather turns bad for a while. Or, if the weather remains fair, I can use the flexibility of the aircraft to hop to other places and see additional sights. Sometimes a staged approach works well. Get to southern Ontario and if the weather is cooperating, hop over to Vermont. If the weather looks bad for a few days, park the airplane and spend the time doing things in Ontario. Go to Vermont later in the trip, or perhaps another time.

My trip itineraries tend to be "thick" in the middle and "thin" at the ends. That is, I make no specific plans for the days that I allow for travel at each end of the trip. I schedule any specific dates – like reserved tickets for sport or concert events – into the middle of the trip. When I'm reserving hotel rooms at my destination I'll usually reserve the whole block from my best-case arrival time until my worst-case departure date. That way, if all goes well on the outward leg of the trip, I have a hotel waiting for me when I get there. If I am delayed by weather, I just call the hotel and tell them I'll be delayed. When departing, if weather grounds me until the last minute

Safe VFR cross country flying requires a lot of flexibility in your schedule

I still have a place to stay, and if I leave early I just check out early. There are time limits as to when you need to cancel reservations etc. but it's worked so far.

Unfortunately, a schedule that safely accommodates the

uncertainties of weather requires extra travel time that not all of us can spare. It helps if you can delay the start of your vacation period to the exact day when the weather pattern is forecast to be favourable for the outbound leg, but not everyone has such an accommodating employer. With most light aircraft, a two week vacation can comfortably accommodate a trip to just about anywhere in North America, depending on how long you plan to stay on the ground at your destination. While weather forecasts are pretty good these days, I seldom have enough confidence in them to cram an overnight trip into a weekend, unless I have the option of missing the beginning of the work week if the weather turns out worse than forecast on the return leg.

Route Planning

So now we dig out the maps, or log onto our flight planning website and consider the route to our destination. Let's see, we need to consider the shortest path to our destination and the available airports for fuel stops along the way. Oh, and we don't want to fly over any large bodies of water because that requires extra emergency equipment, to say nothing of the risk. We can't fly directly over mountain ranges because that requires high altitude and oxygen, and that must be pretty rugged terrain down there anyway - don't want to risk an engine failure over that. And we don't want to have to cross over into the U.S. - that would add delay and complication to everything else...

If you try to minimize all of the above "risks" you will inevitably end up with a flight plan with a single, optimized route. You print out your flight plan information and file it in your flight bag for safekeeping. Then, the big day of departure finally comes and you wake up to discover a forecasted weather system with IFR conditions sitting right in the middle of your carefully planner, optimum route. Now what?

Well, you needed to consider the "now what?" scenario long before the hour of departure. North America is a big place, and there are a lot of potential routes to get to one end of it from the other (or from the middle, in our case). There will usually be two or more practical, safe routes to wherever you are bound. So which one to take? The best piece of cross-country advice I ever got from a wise old pilot was: take the route with the best weather!

That might seem perfectly obvious but it wasn't to me at the time. I was all hung up on finding the shortest great-circle distance, and assessing the inconvenience of crossing the border multiple times versus flying over the "sparsely populated" areas of Canada. Let's face it, there is only one thing you have no control over, and that is the weather. The weather is the boss. If it's feeling mean, stay out of it's way!

Begin by examining the prognostic charts of your proposed route. What kind of weather does it get this time of year? If bad weather settles in, what are the alternative routes? Are they likely to be clear if the preferred route is weathered

Continued on page 40

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Across Canada

RAA Chapters in Action / by Don Dutton

Winnipeg RAA is pleased to recognize **Vic and Dorothy Prefontaine** for their contributions to the local aviation community. Vic and Dorothy have been very active in the flying community and specifically the Springfield Flying Club. Vic was vice President when the land was purchased for the club in 1996 and Dorothy spearheaded the organization of fly-ins. They both continue to be very active in the Springfield Flying Club. They also organize and participate in the annual pilgrimage to Oshkosh. Vic has been treasurer of the Springfield Flying Club but we all know it's really Dorothy who set up the computer accounting system and manages the books. Vic worked for a variety of airlines in Canada and the US and over a period of three years, completely restored an Aircoupe. Thanks to both of you for your contributions to aviation in general and our local flying community in particular!



RON FLEET REBUILD

Last summer Ron Fleet, a member of the **Saugeen RAA Chapter**, had a stall on final in his newly-built Acrosport 2. The test regime had been conducted by a military pilot, and Ron was later doing taxi tests when the plane unexpectedly became airborne. Ron made one circuit, but on short final he encountered severe turbulence, and the plane dropped twenty feet and crashed hard. There was damage to the fuselage and the lower wings, Ron's left wrist was broken, and a lot of fine work went to pieces.

Many of us would have just sold the wreckage and retired

to the couch, but Ron's chapter is a strong support group. Ed Melanson and crew organised a fly-in barbecue to raise money to help him with the reconstruction. Once Ron's wrist was repaired, he was back at his Acrosport. The time away had given him time to reflect on changes he wanted to make, and this was the opportunity to do them. The cockpit of the fuselage was lengthened by four inches, and the battery was relocated halfway down the tail. Originally the 200 hp engine had required some fifteen pounds of lead in the tail for balance, but the lengthened fuselage should obviate this.

All flying surfaces were stripped of fabric and inspected. New spars were made for the lower wings, and most of the ribs were made new as well. Ron had initially painted his plane with traditional dope, but this time he will be using a water-borne paint system. The beautiful paint scheme of the original will be reproduced, and Ron plans to be flying his rebuilt ship this Spring.



RAA LONDON – ST. THOMAS

A recent fatal accident on take-off at a nearby airport prompted Angus McKenzie to write in his President's Message about low altitude "stall spin" accidents, typically caused by trying to turn back to a recently departed runway after a power failure. McKenzie, who has extensive experience flying crop dusters and now his own Murphy Rebel on amphibious floats, wrote that every pilot who lines up on the centre line for take-off faces the possibility and responsibility of having to make the decision on what to do in the event of a power failure.

Most people who make the wrong choice do so, he wrote, because of "an overwhelming primary belief that in event of any emergency they must save a very expensive airplane from damage or destruction... As a homebuilder you have spent thousands of dollars and thousands of hours building the airplane of your dreams. The thought of mishap befalling your pride and joy is unthinkable. Perhaps you are a renter and feel obligated to the rental company to do anything to bring their bird safely home. You are certain your piloting skills could get it down in one piece no matter what.

Add in the variables you do not control like wind direction and speed, etc. etc., and you can unexpectedly be in serious trouble unless you have done one thing before you powered up to take off."

That one thing is the following preflight briefing for passenger(s) and PILOT.

"If we have an engine failure on take-off if still on the runway I will

retard the throttle and stop straight ahead, avoiding obstacles. If airborne I will land as near straight ahead as possible, avoiding obstacles if able."

He emphasizes that the briefing does NOT say: "Try and return to the runway."

McKenzie wrote that the key to making this work comes from making a conscious decision before pushing the throttle that your life and the lives of others on board are more valuable than any amount an airplane is worth. Statistics show that the odds of surviving the controlled straight ahead power off landing significantly outnumber walking away from any stall spin scenario. If you are not prepared for this every time you fly he suggests you add the above "briefing" to your pre-flight checks. To make the option of landing off field more acceptable he advises carrying adequate insurance.

"I feel it is incumbent on any pilot to be prepared to accept the responsibility of damaging the airplane rather than attempt to turn the airplane back to the field. There are many preparations and precautions we take prior to commencing a flight, if you have made all reasonable assurances and completed all the required and expected tasks, then all that is left to do is remember to do your preflight briefing before adding take-off power," he wrote.

Denny Knott, who heads the Sky Hopper project, reported that the damage to the low wing two-seater donated to the chapter is less than expected and volunteers expect to complete the repairs and have the chapter's new flying club in operation by spring. All club members must belong to the

RAA chapter. They will be rebuilding one aileron to get a better fit and finish, checking out the engine and carb and adding dual controls so they can do check-outs. Gary Bishop, who donated the plane, and his wife Sharon have volunteered to reupholster the seats.

OSHAWA DISTRICT RAA

RAA chapters have been asked to take a major role in the 2006 Canadian Aviation Expo on June 23, 24 and 25 by operating a series of Amateur Aircraft Builders' seminars. Expo officials recently announced they will provide a large circus-style tent and have given Oshawa District chapter the task of organizing the seminars, designed to assist builders in acquiring the skills, knowledge and confidence to successfully complete their own planes. RAA chapters – not only those from the south-central area of Ontario but others with members expecting to attend the Expo – are being asked to take part by providing seminar leaders so that all aspects of amateur built aircraft construction can be covered at this Expo event. Chris Gardiner, a member of the RAA national executive and past president of the Oshawa District chapter, is asking chapters to discuss what seminars their members might conduct and have possible leaders contact him at 905-668-5703 or by e-mail at: cgardn628@rogers.com

Other chapter news - Being treasurer of an RAA chapter is not the most glamorous of executive jobs but the importance of keeping the chapter's finances in order was recognized when this chapter presented Darwin Witty with the Woody Procknow Award at the annual 2005 Awards Night Dinner and Dance. Chris Gardiner, the chapter's retiring president, told the 70 persons attending the event that the late Woody Procknow was one of the stalwarts of the chapter in its early days. Witty, like Procknow, is "a dedicated member, always willing to do what ever is needed in support of the chapter" as well as serving as treasurer, said Gardiner. Jim Morrison, winner of the

Contributions to our Chapter Activities section are encouraged. Keep your fellow members updated on what is happening across Canada! Send your reports and newsletters to :

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Member's Toll Free line: 1-800-387-1028

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Woody Procknow Award in 2003, a member of the chapter executive for several years and the chapter's hard working leader of several composite seminars, was elected chapter president for 2006-7 at the chapter's annual election.

OKANAGAN CHAPTER

After 354 days working on a "simple solution" to his engine problem President Cameron Bottrill is looking for a new definition for the word "simple." His Oxford dictionary defined 'simple' as "not complicated or elaborate or highly developed, plain, natural." He had to install a new engine in his homebuilt. He didn't want to spend the time re-engineering the front of his plane, he told members in his "The President's Garage" report in the chapter newsletter, the Slipstream, so he chose a standard aviation engine – a Lycoming O-320 - as "the simplest solution. The job was supposed to go fast because everyone told me it was a simple bolt on procedure. Simple, right? When it comes to airplanes nothing is simple. Yesterday, 354 days after I started, I bolted on the last piece."

Perhaps he simply looked at the wrong definition. He has since found 'simple' can also mean "feeble-minded, foolish, ignorant and gullible." Don't feel bad Cameron. Most builders know exactly how you feel.

OTTAWA/RIDEAU CHAPTER

Canadians know a good, affordable party when they find one. It was six years ago that chapter member Dave Stroud organized his first Sun 'n Fun BBQ for those who make it all the way down to the big air show at Lakeland, Florida. Now it has grown to where he must ask those planning to attend this year to make early reservations. More than 80 showed up last year and it was a bit too much for two to handle, he said, so this year he may have to cut off reservations at 50 for the event on Friday evening, April 7, starting at 4 p.m. Dave is asking for a donation of \$7 to cover the cost of the BBQ pork tenderloin on a bun, cole slaw, potato salad, dill pickles, regular and nacho chips with dip – and \$2 for beverages (Please no BYOB). It will be at Dave's white Award travel trailer with the Canadian flag, to be parked along the fence in the Overflow Parking area opposite the threshold to Runway 09. Entrance to the area is adjacent to the Campground Host's Kiosk, or the brown #2 shuttle bus will drop you off a short distance away.. E-mail your reservation with the number in your group, preference of beverage for each, and your home town before March 28 to Dave at: dstroud@storm.ca

Chapter President Bill Reed and his brother, Gordon, a member of the Kitchener-Waterloo chapter, will be among

Top: RAA TRAILER: Bruce McDermid and Fred Terry of the Collingwood Chapter applying letters after restoration and painting of trailer by chapter members. The trailer full with summer tables, BBQ's, awnings etc. takes up position beside the club's food trailer

the other Canadians helping out at Sun 'n Fun's ultralight operations that week.

TORONTO REGION CHAPTER

Just because chapter members are "getting older" it doesn't mean that they are falling behind in completing homebuilt planes, President Earl Trimble noted in a year-end review of chapter activities. For 2005 they gave out six completion awards although one, for Marty Swartz whose Cubby flew in 2004 but because of the clubhouse fire could not be presented until 2005. Other completion awards, presented at the chapter's Christmas Dinner (turkey, roast potatoes, gravy stuffing and all the trimmings) and Silent Auction were to Brian Heinmiller (Sonex); John Birgiolas (CH 701); Jim Monsur (RV 7); Charles Douma (Harmon Rocket); and Alex Stittle (Osprey). As this is the 84-year-old Stittle's third scratch built plane Trimble wondered if and when he will be starting his next one. A seventh award went to Frank Landon for the "wonderful restoration" of his of his Zenith 300. In her report on the party Eilean MacKenzie said the loudest and longest applause and a special "Above and Beyond" award would go to Clive Jewett, a long time club member, for his "selfless contribution of time, talent and expertise toward rebuilding the chapter clubhouse." Actual presentation of the award will be made at the official opening of the clubhouse later this year.

Chapter elections were held at the year-end meeting with all officers returned. At the executive meeting – the first meeting to be held in the new clubhouse - the executive then voted to return Earl Trimble as president and the others also will continue in their 2005 positions. **RAA**



Mike Wiebe's

Falco

Weebee Air Force Doubles in Size / by Mike Wiebe



On May 18th 2006, we'll celebrate four years of flying our Sequoia Falco, C-FMWW. It took about eight years and somewhere near ten thousand hours of effort to build. Actually, this isn't the first "first flight" for Team Wiebe. So we've got to rewind the time machine a little bit to fill in the pieces.

The History: Pre-Falco

This is the sixth airplane my father has built and flown in almost forty years of flying, and the fourth one in which I have played an active part. I was involved in the first two aircraft, but more as a seven-year-old pain in the butt. Though if you ask dad, he'll tell you I've been a pain in the butt for all six airplanes.

In the mid sixties, my father tackled the dream to fly. He quickly realized that he couldn't afford to own or

even rent an airplane regularly, so he decided to build. Small airplane construction options in Canada were few at the time, but dad bought into the clean lines of Claude Piel's Emeraude. The Emeraude is a low wing, two place, side-by-side, wood and fabric craft, and is the pre-cursor to the Cap 10, which was flown by the French Connection aerobatic team. The Emeraude wing is elliptical in shape, requiring the individual jiggling and construction of every rib. The plans

were drawn in metric and written in French, neither of which dad had a clue how to interpret. Whether or not he knew it then, the perseverance required to complete that Emeraude was the first positive indicator on the 'insane masochist' checklist required to scratch-build a Falco.

A year after the Emeraude first flew, dad and I flew it from our home in Hamilton, Ontario to visit his family near Winnipeg – a distance of about 1000 miles. This was more than 30



*“That’s a **Falco**. It’s probably the only wooden aircraft more intricate to build than an Emeraude. Maybe someday, but not likely.”*

years ago, in a home made airplane, around the rugged north shore of Lake Superior. The power plant was an 85hp Continental that dad rebuilt, after buying it in the insurance sale of an Ercoupe that he had previously crashed. But that’s another story, best told by him after a couple of beers. Though reasonably uneventful, the trip to Winnipeg earned him the second check mark on the ‘insane masochist’ list, and of course committed my name to the list as well. It also committed my mom to the list. Despite suddenly realizing that both

airplane builder” list.

Fast forward two years. Lee Anne and I are newlyweds, when the phone rings. It’s dad. “Hey son, I got a line on a partially built Emeraude project. Ya want half? Don’t worry, the ribs are already built.” A few hours later, after much genuflecting to ATC (A Temperamental Co-habitator), I officially owned half - of half an airplane. I had graduated to full-fledged partner in the Team Wiebe aircraft skunkworks! We made short work of that project, subsequently flying it lots of places, including down to the Florida Keys for some fishing.

Fishing has always been a big part of dad’s and my life. Dad always wanted a floatplane, and with the evolution in kit aircraft, we finally got the chance. Plane number five was a Murphy Rebel on amphibious floats. Now this was a real compromise for Team Wiebe’s senior partner and wood craftsman. The Rebel was a) aluminum, and b) (gasp!) a kit. However, the end justifies the means, and eighteen months later we were on the lake fishing. Insert any number of fish stories here.

her men might perish together in an airplane, she has always kept a reasonable smile on her face when encouraging our dreams. Thanks mom!

It didn’t take long for dad to dream of more speed, just about the time that Ken Rand was making a splash with his KR-2. This was the perfect homebuilder’s airplane – cheap to build and operate, but fast and pretty good looking. Unfortunately dad developed an allergy to those early epoxies, which made me an active partner at age 12. Unfortunately too during the building process, I grew from about four feet to six feet in height. The KR-2 is not a place for two six-foot guys, so dad flew it, and built another airplane – a Cavalier – while I went away to University. It was at university that I met Lee Anne. While most of my buddies were taking good care of their ladies on the weekends, I was traveling home to glue spars, install engines and test fly airplanes. Ultimately on a weekend visit to mom and dad’s, Lee Anne went for a ride with dad. Since she put up with me building airplanes through four years of school, and since she seemed to like the ride (she didn’t puke anyway), I put her firmly on the potential “insane wife of a masochistic

The History: With Falco

So finally we come to the Falco, which may never have occurred except for one strange event. In the mid ‘80’s while building the second Emeraude, we started to see pictures of the Sequoia Falco, and put a few up on the wall of the workshop. As probably the second most active aircraft manufacturing facility in Canada at the time (just behind DeHavilland...), many people came through dad’s shop. All were impressed with the construction of an airplane as complex as an Emeraude, and equally impressed with the pictures of this thing called a Falco. The answer to their questions was always the same. “That’s a Falco. It’s probably the only wooden aircraft more intricate to build than an Emeraude. Maybe someday, but not likely”. At an EAA chapter meeting one day, a new face asked if anyone could provide him advice on building a metal aircraft. Dad was by now building the Rebel, and invited him to the shop. The stranger asked the same question about the Falco pictures on the wall, and got the standard answer. We learned the stranger’s name. Don Adamo visited us a few times, looking for advice and admiring both the Rebel project and

All were impressed with the construction of an airplane as complex as an Emeraude, and equally impressed with the pictures of this thing called a Falco.

the flying Emeraude. Then one Saturday morning he drove in, towing a trailer on which rested the unmistakable bulkheads of a Falco fuselage, loosely held together with stringers, rattling in the breeze. As dad and I stood there with our mouths open, Don explained. Soon after they became available, Don bought Falco plans and started construction. After a while, he realized that the construction of a Falco wasn't what he wanted to do, and it had sat in his barn for many years. Fast forward, and we have Don in our driveway with some wood parts.

Dad and I must have glazed over about this point, because Don snapped his fingers and said "well, do ya want the damned thing or do I hafta set fire to it in your driveway!" It was in the shop in one minute flat.

It lay there for two years. Oh sure, we read eight years of newsletters, pulled out some staples and cleaned up a little varnish, but not much else. Despite Don's impetus, neither dad nor I was sure that we really wanted to undertake the project. Given the value of the Canadian dollar and the inherent cheapness of us as homebuilt aircraft people, we knew that it would have to be scratch-built. The time – and still the money – would be a drain. I think the turning point was Lee Anne. My father does great construction work, but (God love him) he's cheap when it comes to making the project look good. I think he constructed his first five airplanes without using a piece of avionics built after 1950. (The typical Falco construction conversation went something like this – "but Michael, it's a new part!" "Yes dad, but it's a new war surplus part. And I don't know if it's a war in which airplanes were even used."). Having experienced a couple of Team Wiebe airplanes, Lee Anne simply put her foot down. She said that she was sick of all this discussion on building a Falco; and that if we had been building instead of discussing we'd be half done by now; and that if we were going to do it, we should at least not be so darned cheap on the interior and instrument panel! I could have kissed her. Except that I was too busy ordering catalogues from Spruce, Wicks, Chief, etc. The project was a go! Oh yeah, and we did register and order fresh plans from Sequoia Aircraft – a requirement to build a Falco.

History of the Falco

The Falco first flew in Europe as a production aircraft in 1955. It was designed by an Italian named Stelio Frati, who designed a number unique and efficient certified aircraft, including the Siai Marchetti SF-260. Simply, the SF-260 is a four seat Falco, and is most noted for its role in air combat schools in the U.S., and as the most prevalent aircraft in Mu'ammarr Qadhafi's Lybian air force! The Falco first flew with a Continental C-90 engine. Consider the visual and performance impact of seeing this machine, in a time when the Piper Tri-Pacer was leading edge design. Even today, it holds its own reasonably well with the performance of modern composite homebuilts, and in my opinion has a lot more panache! Factory Falcos were wood, but had control surfaces that were metal structure and fabric covered. There were four versions produced, each



with more power and other refinements. I think ultimately more than 100 certified Falcos were produced.

In 1982, plans and kits for the Falco became available through Sequoia Aircraft, in Richmond Virginia. Owner Alfred Scott had struck an agreement with Stelio Frati to make the aircraft available to experimental aircraft enthusiasts. In the process Alfred did it right. The plans, manuals (and kits, if you want them) are absolutely first rate. With more than 300 drawings and a 260 page construction manual, they were and are the standard by which all other kit aircraft was measured. Alfred maintains an amazing website of hints, tips, stories, articles etc. at www.seqair.com.

Alfred has a very simple philosophy on builder support, and it matches well with his philosophy of aircraft manufacturer's liability. If you ask a question about why something is built that way, or what about improving this piece, his standard answer is "it's flown that way for 50 years. Stick with the plans". Except for very few non-structural things, if you change the Falco, you'll never buy another part or receive help from Sequoia Aircraft. For scratch built woodworkers, this can be frustrating.

The aircraft is stressed for +6/-3G's working load and 9G's ultimate. It was originally certified in both Europe and the USA to full aerobatic standards. This is one strong airplane, and the construction reflects that. The fuselage is made of a series of roughly circular hoops about 1-1/2 inches thick and 1 inch wide. Their construction is easy, but tedious. Cut the big circular shape of the hoop out of cheap plywood, then start to wrap that shape with spruce about 1/8" thick. With every wrap, glue the spruce to the previous wrap, until you've laid up between 10 and 20 laminations, depending on the piece. Then space these hoops out and hold them in place with wood stringers the length of the fuselage. The entire thing is then covered with a plywood skin. This skin ranges from about 1.5 mm thick (the vertical surface of the tail), to 3.5mm (fuselage side from the firewall back to the rear of the wing). Remember that the fuselage is a series of compound curves, which means that you are attaching flat sheets of plywood to a surface curved in both dimensions. This is where you test your woodworking skills!

Wings are similarly built, with a one piece main box spar, and a two piece rear box spar. One thing that gives the Falco such incredible strength is that the wing and fuselage are permanently fastened together through numerous big, solid glue joints. Late in construction, you have the option to cut the tail off, to make realistic transportation easier. In the right circumstances, many Falco builders leave the aircraft in one piece. There are additional short box spars through the centre section that add structure for the landing gear. Ribs are spruce trusses, faced with plywood. Again, the wing is fully skinned in thin plywood, scarfing it thinner and thinner the further out from the fuselage you go.

As befits an aircraft of Italian design, the structure, lines and performance are stunning. However, the mechanical systems can be – how should I say it – Italian. Fuel is carried in two aluminum tanks, one forward and one aft of the cockpit. While perhaps not considered the leading edge of safe design, it's a system that has been in place since the original design, and has not been the cause of any problems that I know of. It's not easy to put fuel in a wing full of wood ribs.

The retract system is also pure Italian, with an electric motor between the seats, driving a threaded shaft out to each wheel through a complex little transmission. It's an incredibly tedious system to build, and if you're not lucky, also very difficult to get rigged up correctly. All three wheels have to hit their stops at the same instant, in the same instant that the one micro switch shuts off the motor. Being a mechanical system made up of parts moving in all directions, it has some built-in inertia, which adds to the fun of getting it rigged up. In four years, I've had one occasion where I only got two out of three green lights. A

Having experienced a couple of Team Wiebe airplanes, Lee Anne simply put her foot down one day...if we had been building instead of discussing we'd be half done by now.



Mike's Falco is as pretty on the ground as it is in the air. Sort of makes you want to hop in...

visual by the tower, and the subsequent landing, proved that it was the gear indicator system, not the gear itself.

One disadvantage of the Sequoia kit is its cost. Think of the Lancair or RV kits, and you can picture composite molds and metal presses that make mass production possible. With wood, virtually every part has a significant component of hand labour required to build it, whether it's the end user or the kit manufacturer doing it. Alfred has done his best to automate where possible, but a full Falco kit today costs more than \$90,000 US, excluding engine and prop. Now you know why we scratch built our machine! However, if you want to spend that much coin, you get things like every electrical wire cut to length, colour coded, with crimps on the ends. It truly is an amazing kit.

To date, about 90 homebuilt Falcos are flying around the world. We are one of only two that I am aware of in Canada, though there are at least two more in active construction. Basic specs are length of 21'9", span 26'3", 107 feet

of wing area, and a useful load of about 450 pounds after fuel. Original homebuilt Falcos flew with a 160hp Lycoming and Hartzell constant speed prop, though most being built today use the 180hp Lycoming IO360-B1E. This is an injected engine with a rear injector mounted at a 45 degree angle. You can tell the 180hp Falcos because they have little bumps on the cowling to make room for the top front spark plugs. It carries 40 US gallons of fuel which gives it roughly a four hour range. Many are flying IFR.

Our Falco

Sequoia recommends building the wing first, in a leading edge up position, then to roll the wing horizontal and build the fuselage around it. Since we had fuselage parts, we decided to start there. Our first realization was that a number of years in Don Adamo's barn had not done the fuselage bulkheads much good. Having said that, a scapegoat is always nice. Our airplane turned out left wing heavy – a situation that will forever be known as the Adamo roll.

With most of the fuselage skinned and the basic wing structure in place, we cut off the tail and put it aside. This gave us a short enough section of fuselage that we could finish construction of the wing. Against the advice of Sequoia Aircraft, we chose to build the wing horizontally, mainly because it saved us having to raise the roof (or lower the earth) in the shop. In retrospect, if you have some experience with wood construction and jiggling, I don't think it matters. However, building the wing vertically first, then adding the fuselage horizontally seems to provide the most likely

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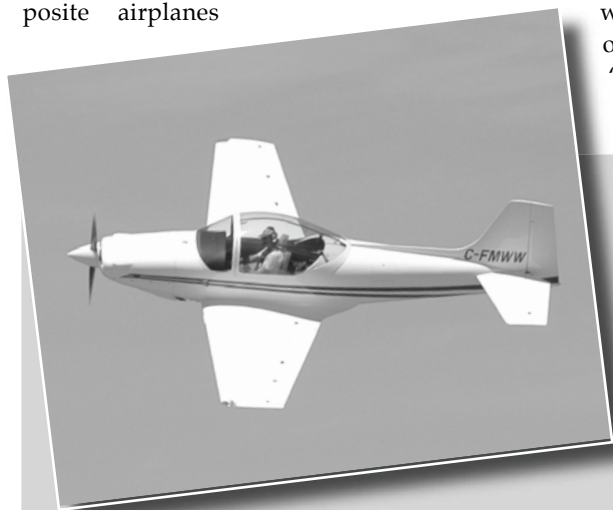
chance of getting it straight. In our case, much of the fuselage plywood was glued on dry without worrying about the compound curves. Patience and good steady gluing pressure are key. One trick to help with this, or any glue joint, is to cut scrap strips of plywood an inch wide. Then drive brass brads or staples through the inch wide strip, through the ply skin, into the structure underneath. When it's all dry, work on removing the plywood strip and all the mechanical fasteners come with it. It's just not classy to leave all those metal fasteners in the finished wood product! Waxed paper under the plywood strip ensures that glue seeping out of a joint doesn't stick the plywood strip down to the finished aircraft. Sequoia recommends Aerolite glue, which is getting harder to obtain, and is tedious to use. Two of our previous four wooden aircraft were built with Aerolite, the other two with epoxy. So the choice boiled down to issues of mixing components, masking and varnishing surfaces, etc. Epoxy is just easier, and we chose West System. The only limitation of epoxy in composite airplanes

can be loss of structural strength if they are painted dark colours, due to the high surface temperatures encountered. With wooden structure, the issue could be loss of joint strength. Without re-opening these religious discussions, we did initially paint the rudder red and test it for temperature with a laser temperature measuring device on a hot sunny day. At 80 degrees ambient, the white surface measured 98 degrees. The red surface was a little over 140. We painted the plane white.

Sanding and finishing took a lot of time, and became a family affair. Wooden aircraft can show the stretch and shrink of humidity changes. We didn't "chase" the humidity by filling low spots, which was a good thing. But we did use two different density fillers – one for 'big' jobs and one for pinholes and scratches. Sanding to a smooth finish across two different densities of filler is a pain in the butt. There are a couple spots where it shows, if you know where to look! The solution is simple – use one fill method (or at least make the final finish all one method). One neat thing we did do is use a roll-on pre-paint water based "primer". This simple

method allowed us to fill and sand right to the final paint stage in our low tech shop. For paint we chose Dupont Imron 6000, which was a new polyurethane base/clear system, not the traditional one coat polyurethane that everyone thinks of when they think Imron. It's a great paint, giving tremendous depth to the finish. But like any base/clear system, it exaggerates the effect of any surface imperfections.

Early in the life of the Falco as a homebuilt, an Italian airplane racer by the name of Luciano Nustrini cut the vertical roll bar that joins windshield to canopy and glued it back on, but "laid back" about 10 degrees. He then attached the canopy to this lowered structure. With this canopy, and a few little tricks like dusting his wing with talc, Nustrini went on to win countless air races in the 60's and 70's. In 1981, he won a famed Italian air race at an average speed of 231 mph from a standing start, around pylons, with a stock 160hp Lycoming. This canopy lends a racier look to the Falco, and is one of the few "accepted" mods that I know of. About half the homebuilt versions flying today use this Nustrini canopy. Their pilots are either very short, or walk around with a perma-



On Saturday morning (May 18, 2002), Falco C-FMWW flew for the first time. At our request, Al Aitken did the honours. Soon after, Al had me in the left seat, and I am now Falco qualified. A local instructor will be checking Dad out, but he and I went flying this morning (dodging snow showers -- what the hell kind of May weather is this? Even for Canada?).

It's still very early in the process and we're not sure what to expect. But so far 22"/2400 seems to cruise it about 170 mph IAS down low. I don't think we've got a particularly fast example of the breed, so this seems high. Especially without gear doors. But all the flying has been in bumpy conditions and I can't get good readings, let alone learn to hold it level! We need to calibrate airspeed before getting into any bragging discussions.

The only confirmed performance figure is the width of the smile on both Dad's and my faces. Empty weight is 1242 pounds (180hp). C of G is right in the zone. Stall is about 71 mph clean, 65 with flap. We've got a little rigging work to do. Left wing and left rudder are both a little heavy. Nothing you'd ever notice in a Cessna, but obvious in a Falco. What the hell -- we need something to fix on those rainy days.

Yahoo!

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ment neck kink to the right. At six feet tall, dad and I chose the standard canopy.

In order to maintain the Falco look, we bought the canopy glass bubble, the cowling, and the nose gear casting. Virtually everything else was scratch built. Custom adaptations on C-FMWW include our own seats and seat track mechanisms (still as low as the originals to preserve headroom), as well as our own electrical and panel design. The panel includes a gaggle of Electronics International engine monitoring instruments, interconnected to various systems. For example, we have their 'black box' wired to collect four cylinders of EGT & CHT, RPM, MP, fuel pressure, oil temp and pressure, etc., continuously. I download it to my laptop for analysis. We also have a voice warning system that tells us if any engine parameter, fuel level or timer triggers an alarm, the limits of which we have preset. This system is hooked into the landing gear, so that if we don't put the gear down when we're supposed to, a beep and a gentle voice overrides into the headset with the message "check landing gear". This is in addition to the normal visual warnings. Bells and whistles are neat, but the active monitoring and warning is the reason to have it. She's got a cute voice too!

The panel is good VFR with a Garmin (previously UPS Technologies, previously Apollo) SL-30 comm, Garmin digital transponder and Garmin 295 color GPS. Through a series of electrical connectors, the panel is modularly removable. Given the tight working space and a fuel tank up front, having the panel removable is a very important part of the Falco design. We included a Navaid single axis autopilot which will simply keep the wings level via a gyro, or follow a flight plan from the GPS. We also mounted two special order 12V narrow beam kitchen halogen bulbs in place of the single traditional aviation light in the cowling. With the addition of a \$35 police car headlight flasher, we now have two bulbs that will shine steadily, 'wig wag' flash for recognition, or any combination in between. Four years later, and they have not yet needed to be replaced.

The engine is a 180hp IO-360B1E, built by Bart Lalonde at Aerosport Power in British Columbia. Bart builds a lot of really good engines for homebuilders around the globe, and is pretty much legendary in the RV circles. If you're looking for a new or near new engine,

call him. We specified an engine with all new parts, except for a first run case and an overhauled fuel injection servo and spider. We chose to use one electronic ignition and one magneto. Since we used an impulse mag, we can start on either system. However, so far our experience suggests that the hotter spark of the Jeff Rose electronic ignition eliminates most of the hassles associated with starting an injected engine – hot or cold. RPM drop running only on the magneto is about 100, while turning off the mag in favour of the electronic ignition shows a drop of ten to twenty RPM. As long as the electronic is running, the mag might as well not be there.

The First Flight

One of the neat things about the Falco building community has to do with a little event in rural Virginia called the Urbanna Oysterfest. It's a fall fair featuring – you guessed it – oysters, and it happens to be located in the village where Alfred Scott, the owner of Sequoia Aircraft has a summer home and a grass airstrip. Dad and I, and then in another year Lee Anne and I, have both attended the world famous Urbanna Oysterfest. In the process, we met Al & Nancy Aitken. From that point, there was never any question as to who would test fly the airplane. What is truly amazing is that a man whom we didn't know that well at the time, would find a four day weekend in the middle of one of the most hectic professional periods of his life (and two weeks after the birth of his first grandchild!), to come to Canada with his wife and fly our airplane. After watching him operate, I know why. Though he is now retired, at the time Al flew for American Airlines. He is also a retired U.S. Marines F-18 carrier pilot, Viet Nam veteran/pilot, and an official graduate of the Pax River flight test school. Need I say that he takes the job of test flying seriously. For example, after numerous low speed ground runs, the Hamilton control

tower lightened the conversation by asking if he thought it might actually fly. Al's response: "so far, its ground handling is what I would expect from the type". Al's approach is simple – he eliminates future risk with every step he takes. In the end, he made his job easy. And that is a problem. Someone like Al - who knows what they're doing - makes it look so easy that we normal idiots think we can do it too. Then we skip a step, something goes horribly wrong, and we wish like hell that we were somewhere else. My strongest advice to high performance – or for that matter, any – aircraft builder is to get someone with Al's attitude to test fly your airplane. If something goes wrong, you as the builder might have 'the right stuff', but I doubt it. Why find out the hard way.

Once the test flying and checkout work was done, we went flying in the Rebel. I was able to give Al a very unique Canadian experience – landing a floatplane on a Canadian lake in a snow squall. Not normal May weather, even for Canada. But part of the experience anyway.

The Performance

Here the review falls a little short. Neither dad nor I have any experience in a constant speed retractable aircraft in this speed range, so much of the testing time was spent staring at the GPS with disbelief. 22"/2400 seems to cruise it about 170 mph IAS down low. Full tilt boogie at 5500 feet yields 180 mph IAS for about 195 TAS. This at 24" and 2500 rpm. At 10,000 feet, where we fly cross country, it will routinely top 200 MPH burning about 7 US gallons (28 litres) of fuel an hour. I don't think we've got a particularly fast example of the breed, but it's good enough for us. This year, Lee Anne's and my return from Oshkosh to Hamilton was 1.9 hours, for a take-off to touchdown average speed of 199.5 knots, or 230 MPH! I'm sure there was a tailwind, but either way those numbers are fun to quote. One fun memory is leaving Hamilton after work on Friday, and having dinner in Quebec City. Another is a 15 mile race with a Westjet 737, both of us descending from the Kitchener area for landing in Hamilton. He had the straight in

(continued on page 32)

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Flying with Ultralights

by Calvin Thorne

Glen Clarke, Murray Cherkas and Calvin Thorne from the RAA Calgary chapter joined four Ultralight aircraft from the CUFC for a crisp flight on December 18th a Sunday. The trip was planned by the fellows in the local ultralight club in Calgary the CUFC (Calgary Ultralight Flying Club) and we all get together to fly with one another as often as possible.

The morning was -19 degrees at my house in Cochrane west of Calgary and not any warmer when I departed Springbank Airport. I used a transponder code and got clearance to cross over the city to Kirkby Field at Chestemere Lake on the east side of Calgary. This morning besides being very cold was also severe blue sky wall to wall and only light wind in the forecast.

Takeoff in the 150 hp Supercub was incredible in the

for spacing from another heavy jet inbound from the east. A few minutes later another vector and he had us lined up with our destination airfield Kirkby Field at Chestemere Lake just east of Calgary and soon let us go from his control.

Over flying the Kirkby field we saw a yellow Cub on the runway and I knew it must be Glen. He radioed that he was going to push to the side of the runway and try to restart his engine but as we were on final he had managed to prop it and was clearing at the far end of runway 16. We met Glen Clarke in his Cub and Al Botting in a Cubby, Murray Cherkas in his Rebel and Stu Simpson in his Bushmaster.

Temperature was now noted as being minus 4 at 500 feet but still was in the -13 range on the ground still. The inversion was rolling in as forecast but still only light winds were expected. We departed and all flew a few miles north and landed at Reid Huzzie's grass strip to get two Challenger fliers, Robin Orsulak and Ken Taylor, to join us. A short delay due to cold starting and warm up procedures including

Airplane parts, tires, batteries, books, manuals,
student kits, AvComm, David Clark, Telex headsets

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boosting from a truck and the two newly built Challengers were on the roll with us. We all departed as a pre-organized flight of "Dragonflies" as we were called for this group formation flight that was to be in a Vee formation. The CUFC does this a lot and has a great preflight briefing to all so everyone knows where they are to be in the formation depending on their speeds. The Cub and the Supercub and Cubby would be at the rear of the formation so we had the ability to do 360's to control our higher speeds. Emergency procedures and communication frequency particulars were discussed and we were soon off again. The flight formation would have only one lead (Stu) who would call out our intentions to Air Traffic Control at the Springbank airport as we neared that

location. This worked out very nice as the controllers would sequence us all in together and we could land line astern behind each other in close order. As we all left from the ultralight's field we just headed due south and went sight seeing to the south of Calgary by about twenty miles. Then a heading change called out by our lead had us heading straight for those magnificent Rocky mountains lined up like a wall in a SE to NW line. Just as we ventured into the foothills it was time to head north and pass over the reporting point of Priddis Corners and venture into Springbank airport airspace. Our leader called out the intentions and as we were all at the proper required altitude of 5000 feet now we were given clearance to continue in at line astern formation.

Not a cloud and not even the slightest bump was making for an exceptional day out together. A wonderful day in the sky. The Springbank control tower fellows were quite entertained by our formation flight and gave us the formation landing as a loose group as we came in on downwind for runway 25. Only one other Cessna 172 was close and the tower had him space outward so we could all get in together. A descending right hand 270 degree turn (not normal) was next to get us on final approach. It was really unique to see our leaders go around to the right and then under us on final as I brought up the rear of the line astern formation for landing. All were spaced safely apart with each landing while the plane in front was still rolling on the runway. The tower allowed us all to park in a

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semicircle at the base of the tower and we were off to the airport restaurant for lunch together. We had a great flight together and enjoyed very much flying with the Calgary Ultralight fellows. I stayed on and called it a day and so cannot comment on the return trip back home but I know they continued to have a great flying adventure. We flew with good friends in wonderfully constructed aircraft and will fondly remember this flight like so many others.

Keep On Building! **RAA**

Calvin Thorne is a commercially rated pilot living in Cochrane Alberta and is a director in the Calgary RAA chapter. He rents a 1958 Supercub from a friend



Calvin Thorne

while building a VISION composite aircraft from scratch. You can contact him at email cbthorne@telus.net. Progress of the VISION construction can be found at his web site www3.telus.net/public/adele0/tailfeathers.html

Falco (continued from page 29)

approach, while we had to turn final to a different runway. We were one mile apart, VFR, side by side all the way down the approach. I'll conveniently ignore the fact that he was configured for landing and we were flat out. Ya gotta race a jet at least once!

As many have said previously, the real pleasure of a Falco is in the control feel. This thing carves an arc through the sky like no airplane I've flown. It has amazing control harmony, and a very light – but not objectionably so – control touch. Just think finger movement and the airplane responds. As Al said during my checkout, move your wrist for 'big' maneuvers, and don't even think about using your elbow or shoulder! We have fun giving Cessna drivers rides and watching them over control. We incorporated a MAC electric pitch trim system, and it does get used. The difference between high-speed cruise and the landing configuration requires a fair amount of trim. Dad and I can feel that now, but initially, we had a hard time even realizing trim was necessary. It's only after getting used to the light controls of a Falco that trim even enters your mind.

Empty weight is 1242 pounds. C of G is right in the zone at 65.2" back from the prop flange. What this means is that there are some C.G. situations where you can't fly with a full front tank and an empty rear tank. This is solved with simple fuel management. Stall speed is 71 mph clean and 65 dirty. So far I've done a reasonably good job of resisting the urge to do aerobatics. As part of my checkout, I learned that stalls and spins are a blast, but not to be trifled with. The wing is thin with little washout, and so it all stalls pretty much at the same time. We chose to put stall strips on the inboard leading edge in order to get some pre-stall indica-

tion. In smooth air, you can feel a gentle buffet about three mph above stall, followed by a nose porpoise. During my first ham-fisted checkout, there was no warning before we were pointed down – like REALLY down – and going over on our back. I was a little busy at the time, but I think that sound in my headset was Al laughing. That first stall cost me 1500 feet of altitude. A couple dozen more attempts since then has made the stall a non event, but this is not an airplane to get lazy with near the stall speed, particularly at circuit height. Big lazy wingovers don't count as aerobatics, at least to me. So between those, testing the glue joints to plus 3.5 and minus one G, and flying lots of places, we're both getting enough giggles to make the price of avgas worth every penny.

Currently I am having a blast flying the Falco, but not nearly as often as I'd like, thanks to the work schedule. Dad does too, but he is first a builder. So, soon after the completion of the Falco, he took on the task of helping a friend build a Rans S-7, soon to be on floats. In the summer of 2004, we sold our Rebel Amphib to another father son flying team in Nipawin SK. C-GJAC has since been on floats, wheels and skis. Judging by the pictures from Kevin, she's still hauling speckled trout regularly. The reason we sold her was to bankroll another project; a 'new and improved' floatplane, based on our Murphy Rebel experience. This spring should see the first flight of Murphy Elite C-GJWW, with another set of amphibis not too far behind. Dad's (and my) first construction love is still wood. So I expect that soon after completion of the Elite, dad will probably start to build birdhouses – NOT! **RAA**

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Jack: weebee1@sympatico.ca 905-662-7111.



Alternate Air

**From top down: That famous F-1 Rocket smile;
A domed screen was formed from a Cessna part, and was stuck down with silicone seal;
Inside view of the airbox. All fasteners will be covered with silicone seal for security;
The soft spring operates through a shallow angle, with just enough oomph to keep the trapdoor shut when the filter is not restricted**

trap door shut if the air filter is passing enough air. When the filter becomes blocked, the trap door opens to admit alternate air from inside the cowling. This is essentially a reed valve.

There is always the possibility of loose hardware inside the cowling, so a screen is necessary to keep the larger chunks out. I started with a filter screen from a Cessna 150 and pressed it into a domed shape with a small hydraulic press. A block of hard rubber was the female die, and the tank cap was the male. It is important to have the screen cut to a circle just large enough to make the part, plus an allowance for the flange. Any extra material increases the chance of forming puckers. I got only a few puckers and these were later tapped out by hand over the top of the welding cap. The edges were then hammered down to become a flange, and a small slot was bandsawed to clear the aluminum spring bracket. This screen is kept in place with high temp silicone seal, rather than using bolts or rivets that could possibly come loose.

The last touch was to put a thin smear of silicone seal on the working face of the flap. This cushions the return stroke and prevents fretting of the fibreglass. A initial runup with the air filter taped off showed that the alternate air was enough to maintain revs for level flight. The brakes were the limit of this test. Tying the tail down would allow a full throttle test, and this is recommended before flying.

Wayne Hadath RAA #8793



WHAT IS ALTERNATE AIR, and why do you need it? If the air filter gets plugged by snow or freezes in rain, you will immediately understand the need. A carbureted amateur-built will already have alternate air via the carb heat knob. This air bypasses the filter and is supplied from inside the cowling. Frequently it is possible to pull halfway and get a mix of hot and cold air that will allow the engine to make enough power to maintain altitude. However these days we are seeing an increasing number of fuel-injected engines, either mechanical or electronic. Because these have no venturi, there is no requirement for carb heat, but they are susceptible to a plugged air cleaner. Alternate air is the solution, and it can be simply provided with an automatic spring-loaded trap door. Here is one setup:

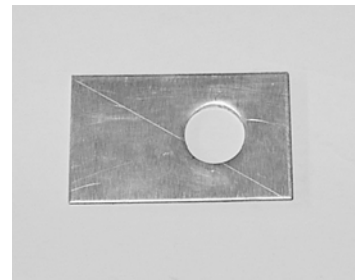
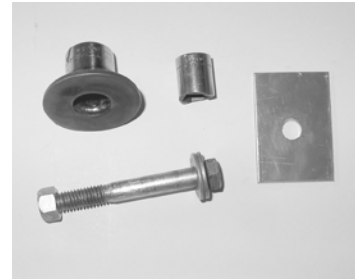
In this installation the air flap is made from a thin piece of fibreglass sheet, hinged to the inside of the airbox. All fasteners are solid rivets to limit the possibility of nuts coming loose or mandrels falling out of pop-rivets. Silicone seal is used for security. The air flap is kept normally shut by a light hardware store spring operating through a very shallow angle. This provides just enough tension to keep the

I NEEDED A COLLECTION of accurately-made holes in aluminum when I was doing the panel and plumbing on my RV-6 and was faced with a dilemma. Drill bits do not make round holes in thin material, and Unibits are usually available in 1/8" increments. I needed 11/16" and the cost of a Greenlee punch was out of the question for such a small job. I decided to make my own "greenlee" from socket wrenches.

My old 1/4" drive socket collection yielded one that had an almost exact 11/16" OD. This was going to become the punch. Another socket was found that was a loose slip fit over the punch. The hard part was to find a plate washer to become the die. The requirement is that it must a tight sliding fit on the 11/16"

larger socket. It is possible that epoxy might do the job for a short run of holes, but most of us either weld or know someone who does. The important consideration is to make certain that the plate washer is concentric with the socket. Once this is done, the die is ready for use.

The 11/16" OD socket needs a bit of grinding to produce a good cutting edge. Grind the end of this socket so that it is flat and sharp. This could be used as-is but the cutting will go easier if the end gets a bit of shear. Greenlee cuts the working end concave and I did the same, using a bench grinder. This left two opposite points on the punch to do the initial stabbing of the material. You can see this concave cut in the photo.



An Inexpensive Hole Punch

punch. Fortunately there are two series of plate washers available at most hardware suppliers, tight and loose. A nominally-sized 5/8" washer was a .008" slide fit over the 11/16" punch, and this was to become the die for the "greenlee". Anything looser than .010 clearance will result in a burr on the backside of the hole being punched.

Greenlee uses a bolt to draw the punch and die together, and this bolt is also the guide to keep them aligned. I drilled the sockets, 1/4" square drive holes to a good 3/8" diameter so that I could use a 3/8" bolt to do this job.

The hole of a plate washer has one rounded edge and one sharp edge. Put the rounded edge against the socket so that the sharp edge will do the cutting. There is now a bit of welding necessary to attach the plate washer to the

To use the punch, first drill a 3/8" hole where you want the final hole to be centered. Assemble the punch and die with the bolt aligning them, and draw the two together with wrenches. The two points of the punch will stab through the aluminum first, and the slug will end up inside the die. After the hole has been cut, undo the nut and wiggle the punch out of the hole that it produced. It will be a tight fit so a vise-grip might be necessary, but keep it away from the cutting edge. The slug will be cupped and will usually fall out of the die but if not, remove it with a pin punch before going on to the next hole.

The backside of the produced hole might have a bit of a burr depending on the material being punched. A file or countersink will get rid of this. With this simple "greenlee" I have done aluminum as thick as .040", and also .018" stainless firewall material.

Terry Jantzi RAA# 3641

Top Down: Two sockets, a washer, and a 3/8" bolt with nut. The test coupon is .040 aluminum with a 3/8" hole; The parts assembled with the aluminum test coupon. Note the cutaway on the upper punch; The finished hole is perfectly round and on size

Terry Jantzi's Portable Illuminator

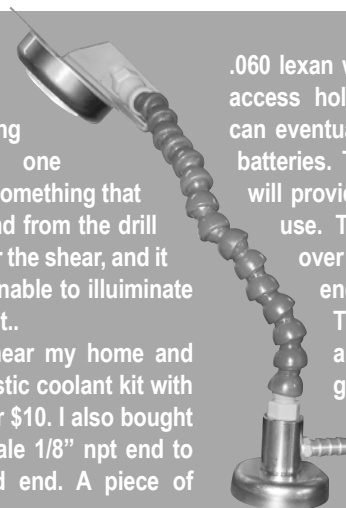
SYLVANIA IS NOW PROMOTING their Dot-it LED battery lights, but they have



a limitation. These have an adhesive backing for sticking permanently in one location. I needed something that I could move around from the drill press to the lathe or the shear, and it had to be repositionable to illuminate the appropriate spot.

Princess Auto is near my home and they sell a little plastic coolant kit with a magnetic base for \$10. I also bought a coupler and a male 1/8" npt end to replace the fanned end. A piece of

.060 lexan was bent in the brake, and access holes were drilled so that I can eventually replace the three AAA batteries. The specs says that a set will provide 72 hours of continuous use. The lexan was drilled just over 3/8" so that the 1/8" NPT end could thread its way in. This LED light is now used all over the shop to provide good light for drilling holes, machining, and positioning sheet metal for shearing.





Left: the red laser dot is the centre of the sampled area. At this distance the sample is about 1.5" diameter

Princess Auto Infrared Thermometer Gun

PRINCESS SELLS a handheld infrared thermometer gun that occasionally goes on sale for \$89.00 and at this price it looked interesting for aircraft and general use. I wanted a means to see if there were any exhaust system hot spots on the cowling of a plane, and this unit looked promising.

This handheld gun has a red laser dot that assists in aiming but the actual work is being done by a semiconductor device that measures the amount of infrared that is being produced by an object, and this is translated into temperature. There are all sorts of these infrared thermometers at widely varying prices, and the Princess unit is right in the middle of the market. As usual there is a one year return policy, so save your receipt.

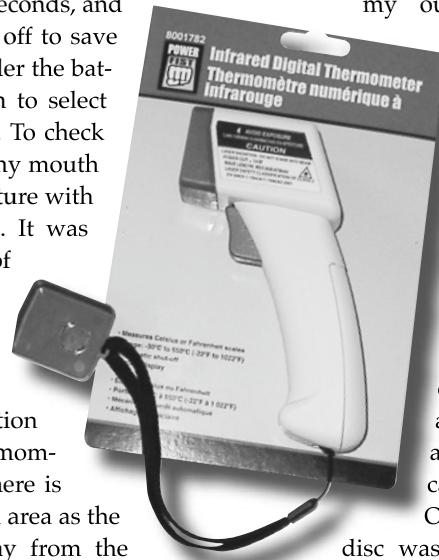
In use the laser dot is aimed at the object in question and an instantaneous reading is given on the rear-mounted screen. The digits are 1/2" high, black on a light blue background, and they are large enough for most of us to read without glasses. Scanning the laser dot over a cowling will give readings of the temperature immediately. There is a sample and hold feature too, in case

you have to work out of position. Aim the dot at the difficult to reach spot and then release the trigger. The last sampled temperature will remain on the screen for five to ten seconds, and then the screen shuts off to save the 9 volt battery. Under the battery cover is a switch to select Celsius or Fahrenheit. To check calibration I opened my mouth and took my temperature with the sample and hold. It was within one degree of good old 98.6, close enough for anything that I am measuring.

There is a limitation to all infrared thermometers, and it is that there is spread of the sampled area as the object is further away from the gun. In the Princess gun the spread is 1 in 10, so at one yard the sampled area is 3.6". If you want an accurate reading you should try to get within a foot so that the sample is 1.2", as if you would have to if you wished to compare exhaust pipe temperatures. The range of this unit is up to 1000°F so

the actual exhaust flame temperature will be beyond its range. However the exhaust pipe itself will show a lower temperature, and in most cases this range will be sufficient. Commercial units can measure much higher temperatures but they cost several times the price of the Princess gun.

Besides checking aircraft, the gun is handy around the hangar. I scanned the door of my hangar to see if the insulation was working, especially at the edges of the bifold door. This hangar is heated with a forty foot gas-fired radiant tube, and I could shoot up to it to see the temperature gradient and the B-vent chimney temperature. Because the tube is eight feet above



my outstretched arm the sampled circle was about ten inches, not good enough for actual temperature readings, but good enough for understanding the gradient. The gun also showed up a draggy brake caliper on my car. One front brake

disc was operating at a much higher temperature than the other, indicating a sticking caliper piston. In the near future I plan to be doing some vacuum thermoforming of plastic, and I expect that the Princess gun will be useful for that too.

-Gary Wolf #7379

President's Message from page 2

on one project for awhile, then on another, and our social lives revolve around the workshop. This was a revelation to Transport, and it became apparent that they were of the opinion that all of us want a quickbuild kit that can be hastily screwed together, so that we can get into the air as fast as possible. They felt that without this wording, a manufacturer could set up an assembly line and call one the "A" model, the next the "B" model, and so on through the alphabet. At our insistence Transport agreed to drop this proposed document, and there was then a discussion about the original justification for amateur building, namely education and recreation. We all agreed that it was completely legal to build a project and to sell it before completion, then to repeat this as many times as one wished. The builder might just be pursuing education, or he might be building to sell, but it is legal either way. This does not contravene the current definition of mass production.

One Inspector was adamant that he wanted something that would allow him to judge the intent of the builder, whether a fellow was building for personal or commercial purposes. This would be similar to a policeman being allowed to ticket you because he thinks that you might want to speed sometime later in the day. Fortunately this "intent" line of argument was not pursued. He did say that the real test would be to take someone to the Tribunal to get a real ruling. I would suggest that anyone who currently owns two of the same project should be aware that this is a breach of the rules.

At this CARAC meeting Transport asked that each association and stakeholder group should provide a representative to be part of a working group to deal with the regulations that govern non-certified aircraft. Transport now appears to want to roll

all non-certified categories into one, and none of us can understand why, or how they expect this to be accomplished without compromising the privileges that we already have. They have assured us that they do not want to limit the privileges of any person or aircraft currently flying, but there was a quietly-spoken qualifier that there might be some extra requirements to maintain these privileges. The working group will have to deal with all

It seemed that they were confusing mass production with their real concern, that someone might end up with a complex aircraft about which he knew very little.

of this during the half dozen two day meetings that we are expected to attend in Ottawa during this calendar year. Expect that this will cost RAA members in the range of \$5000 to fly and house volunteers just to keep what we already have. This money could have financed four more sets of weight and balance scales or other hardware that could benefit our membership.

The other non-certified categories are more vulnerable than amateur-built. Owner Maintenance remains a dead end because the US will not allow these aircraft to fly into their airspace. Also it is currently necessary to bring an O-M candidate up to the condition that it will pass its annual, and then every part of it becomes decertified when it goes into Owner Maintenance. In the early days of the O-M program, back before the US forbade these planes to enter their airspace, three Mooney M20's with retractable gear made it into O-M. That was then, and it appears that these were admitted into O-M by mistake. The rule about repositionable landing gear is

now being so strictly interpreted that even amphib floats are not allowed anymore. RAA Canada does not recommend that anyone opt for this category. You are dead ending your plane. It cannot be sold into the States, nor can it be flown there, not even on a waiver to go to Oshkosh.

The two ultralight categories are somewhat vulnerable because Transport has been asking if these planes should have some sort of flight

authority, which they currently do not. It is difficult to believe that any flight authority could be issued without there being some sort of standard, and an inspection by someone in authority to ensure that the standard is being met. For the Basic UL there is currently no standard, so the conclusion to be drawn is that one might be imposed. Otherwise the question is moot. For AULA planes there is already an excellent standard, but no one at Transport has ever checked to see if the planes on the Eligible List meet it. Both ultralight categories are under the Part VI RecAv section of Transport, but these questions are being asked by the Part V Maintenance and Manufacturing people. There are cutbacks proposed at Transport, and it appears that there might be a quiet turf war under way.

It will fall to the working group to determine how to handle these questions, and to report by November 2006. We will be spending your money and our time on meetings in Ottawa for awhile. Why, you might ask? **RAA**

Jack Schenck's Jodel being put to bed last fall. A beautiful example of the type!



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 36 Guildwood Walk, London ON N6H-3X2

Ontario S/Central: Gunnar Doerwald

..... 905-468-3713 gunnar@doerwald.net

Ontario East:..... TBA

Ontario North:

Morris Frandsen705-732-2789 frandsen@vianet.on.ca
RR#1, Rosseau, ON P0C-1J0

Quebec:

Raymond Fiset..... 418-871-3761 rayfiset@qc.aira.com
7925 Hamel Blvd., Ste Foy, PQ G2G-1C8

Appointed Positions:

Translation:.....Pending
 Magazine Mailing:Dave Evans
 Ultralights: Wanted
 Web Page Frank Noordhuis
 Insurance Committee Gary Wolf
 AirWear.....Bill Tee

Classified Ads

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 :raac@inforamp.net

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

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

Advertising Policy

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

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

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

Recreational Aircraft Association Canada

President: Gary Wolf
Vice President (Programs): David Moore
Secretary: Chris Gardiner
Treasurer: Wayne Hadath

Recreational Flyer Magazine

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Contributing Editors:

Owen MacPherson
Don Dutton
George Gregory

Art Director and Layout:

George Gregory

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

For Sale

Valcom 760 TSO Transceiver, New \$650.00 Peter @ 705-267-1836 or nubbie@ntl.sympatico.ca may 05

Dakota Hawk taildragger lookalike, all wood geodetic construction side by side project. Excellent workmanship, sitting on gear and ready for MDRA precover, or could be finished as an U/L. Includes some panel gauges. Alex 519-742 8441 may 05

Prop duplicator machine, very strongly built. Accepts most 2 hp routers. \$500 Alex 519-742 8441 may 05

ACRO SPORT airframe including all fittings, controls, empennage but minus wings \$4000.00 USD 418-871-3761

PIPER COLT complete airframe \$3000.00 USD 418-871-3761

Subaru EA81 engine, running well when removed from under 100K car. \$300 meled@wightman.ca 519-665-2161

Set of dimpling tools. Avery Dimpling Tool (arm) with 22 inch throat \$149.00 CDN. Set of dimple dies for the above - 3/32, 1/8 and 5/32 \$102.00 CDN. Poly dimpling mallet \$18.00 CDN. 3 X 5 foot dimpling bench for the above \$25.00 CDN. TATCO hand squeezer STH-90 with STY-20 2 inch yoke \$98.00 CDN . Total group price - \$392.00 CDN or near offer. Will sell individually. Shipping is extra. Dave at 416-282-5252 or daveaustin2@sprint.ca

1962 Cessna 150B Patroller, unique airplane with long range tanks, equipped with Horner wingtips. Fresh, extensive annual just completed. Was used as patrol aircraft. 14,400 hrs TT, 1450 SMOH, 650 STOH. Great flying aircraft, strong engine. Well maintained. Stationed at CYKF. Asking \$23,500.- Send email to rudyhane@rogers.com and I will supply more info and pictures.

Lowrance Airmap 1000 GPS, as new, bought few months ago, July database large screen. Comes complete with all accessories. card. Only thing missing is the box. New price including taxes is about \$850.- selling for \$750.- AND include a 512 meg data card (\$90.- value) instead of the standard 32 meg memory card. Email for details: rudyhane@rogers.com

Stits Skycoupe on Full Lotus floats, wheels available. Fabric recently rejuvenated. O-290 engine. Asking \$25,000.- For pictures and more detail email rudyhane@rogers.com

Cleaning out the barn: Pair of Cessna 150 fuel tanks; C 150 Flaps; C172 gear legs complete with axle; C 150 upper and lower cowls; LH and RH elevator for PA-12, one rebuilt one needing minor repair; C 150 doors, LH and RH; various sets of wheel pants for PA-28, C 150, C 172 and Champ; Turtle deck for a standard KR-2 (why build one when you can buy one cheap!); Tail wheel assembly for home built, 5" dia; Tach left over from a BD-5 kit as well as a spinner for same; 2 new Air Trac 500-5, 6 ply tires, 1 new Condor 600-6, six ply tire with a new inner tube, 1 new Brackett air filter assembly for C 172, incl. filter element; 5 Champion oil filters; aircraft brake fluid and Shell aviation grease cartridges; home crafted scales (using bathroom scales) for main wheels 1000lbs max. with drive-on ramps. Email: rudyhane@rogers.com can return with pics.

Lycoming overhaul manual and parts catalog for O-320 A and E Series, asking \$60.- for both; Carburettor for O-320, Price TBA; one new cylinder assembly for Continental O-200, asking \$200.- rudyhane@rogers.com

ACRO SPORT airframe including all fittings, controls, empennage but minus wings \$4000.00 USD 418-871-3761

McCaughey IC160/CTM7557 , with logs - \$1,000 . Prop bushings set Lycoming O320 diameter 5/8" drilled 7/16" - \$150 Bill Smith evergreeninternational@symp

atico.ca 705 526 9279

R80 Bush CADDY for sale. Complete kit approx. 30% built. Contact Bill at w.brubacher@sympatico.ca

Valcom 760 TSO Transceiver, New \$650.00 Peter @ 705-267-1836 or nubbie@ntl.sympatico.ca may 05

For Sale: Sonex serial number 320. Included: plans, machined spar caps, formed alum kit, form block kit, Titanium gear legs for std tailwheel, tail tips, seat belts, lead counterweight, cherry rivet kit, stainless steel firewall, all hinges, all 025 aluminum sheet, angle and plate - wings skins and fuse sides layed out and pilot drilled, some hardware and tailwheel, Total cost about USD\$6300 plus tax - Save over \$2300 over Sonex cost -Priced to sell quick at USD\$4000 or best offer. Bonus - I will throw in a Lightspeed 20xl Active noise canceling headset in as new condition with case. Email me for more info at airplanes@sympatico.ca or call Chris at 1-866-733-8432.

SPACEWALKER 2 : 38 Hrs. Engine and airframe. Lycoming O-290-D2 135 HP. Full Flow Oil Filter Cyl. Head Temp. Gauge Oil Pressure and Temp Gauge Electric fuel gauge all tanks Electric start Val Comm 760 radio Narco Transponder mode C ELT Fitted Intercomm Fitted 18 Gal Main tank 2 - 5 Gal wing tanks Polished prop and Spinner Absolutely outstanding aircraft. \$23,000.00 CDN. O.B.O. George403-931-3449 George@ace-aero.com e-mail for pictures

Nice Tailwind for sale, C-90. This plane is too much for me to handle. \$25,000. firm. Ted Strange 1-250-762-492

Midget Mustang CGXII, 170HTT. New tail wheel, tires and brakes. 127mph cruise @2250RPM Cont. 85. Will sell with or without the motor for half the cost of materials. Annual due July 06. Serious enquiries only. meled@wightman.ca

For Sale - one three blade 68" warp drive prop for Rotax 582 engine, one blade

missing Contact Don (519) 372-1383 or kinger@bmts.com.

For Sale: Zenair Zodiac 1996. Cont. 0-200 125 hrs. A/F 340 hrs. Beautiful flyer. Photos available on request. Must sell, bought RV. Asking \$34,000 CDN. 519-442-2962 dorothybenton@hotmail.com

For sale: 3 sets of axles, 1 π" x .120" 4130 steel tube. Mains are 8" long, nose is 9" long. No fittings cut or welded, no holes drilled, just the plain tube. Offers on one or more sets. Proceeds to RAA-Toronto Region. Ken Yates, 905-857-3218, kennan@rogers.com.

Titan Tornado 2 set up for Rotax 912 assembled includes electric flap, hydraulic disc brakes, wheel pants 25 gal fuel tank VFR instruments, primer & paint. No engine. \$22000.00 CDN 418-661-1328 marie_andre@b2b2c.ca

Stolp Starduster II, 200 HP, C/S, Inverted, Canopy, 300 TT, \$35,000, PA22/20 Super Pacer project, wings ready for inspection, fuselage lengthened & painted, every thing here to complete, 200 HP, 3 pld C/S McCaughey, 2400 Floats \$40,000. Buy both, fly the Starduster finish the Pacer, good deal for both. 1-250-785-6789 Jim. Central Time.

Subaru EA81 engine and redrive by Reductions. Engine 105 hp @ 4500 rpm. Redrive is 2.1 to 1. Run up time after assembly only. \$5000 firm 204 488-0829 or bwkirk@mts.net

FOR SALE

Member of a local RAA Chapter has passed away and widow wants to find a good home for her husband's Luscombe 8A on owner-maintenance. It has the C85 engine with starter and generator. This Luscombe had corrosion inspection of the tank areas in wings carried out before changeover to owner-maintenance. Airframe hours are around 2500, and engine hours are in the mid 1600 and runs well. Aircraft was hangared almost all of the last 10 years. Sacrifice at \$22,500 OBO. For more **continues**

Over the Horizon Cont'd from page 18

in? Naturally you need good weather at your departure airport and at your ultimate destination when you get there. But for the middle of the route there are usually options. Some alternatives may be nearly as quick as your original preferred route. Plan out several route options in advance so that you are familiar with the terrain and fuel stops along each. Don't focus all of your attention on the "best" shortest route. Airplanes move fast and a hundred extra miles to avoid weather may cost you less time than you think. Taking an extra hour or two to deviate around a weather system is a minor consideration on a trip lasting several days.

To use the example of a trip from Winnipeg to southern

Plan out several route options in advance so that you are familiar with the terrain and fuel stops along each

Ontario, I usually consider three primary routes – The "All Canadian" route which follows #1 highway eastbound north of Lake Superior, the "Upper Michigan" route which follows the southern shore of Lake Superior, then onto Drummond and Manitou islands, and the "Lower Michigan" route which loops around the south end of Chicago and Lake Michigan, before proceeding northeast to Ontario. Suffice to say that the geological impact of the last couple of ice ages makes getting to southern Ontario from Winnipeg an interesting challenge with several distinct choices.

The "All Canadian" route is the shortest, distance-wise, but once committed to that route, there aren't a lot of options for weather diversion without flying over even less inhabited wilderness or one or more of the Great Lakes. Even if you are following the highway exactly, you will find the route lacking in both airports and airplane-friendly terrain. However, on a clear day it is a fast, picturesque and convenient passage and no border crossings are involved.

The "Upper Michigan" routes threads its way through,

and thereby offers a view of, no less than three of the Great Lakes. Unfortunately all that proximity to water seems to endow the route with less favourable weather. The terrain is generally rugged, airports still rather sparse (though better than in northwestern Ontario) and due to the peninsular topology, there are limited opportunities for diverting around weather enroute while remaining over dry land. Though I always include it in my pre-flight planning, I have yet to actually fly this route. One of the other two routes always ends up looking like a better bet.

"Lower Michigan" is the longest route but the time penalty is only an hour or two for most aircraft. (Besides, more hours = more flying fun, right?) This route offers a number of advantages. There are dozens of airports directly along the path of flight, and hundreds more within a reasonable distance offering plenty of opportunities for fuel or precautionary landing if required. Radar coverage, weather reports, ATC and FSS support are there whenever you need them. Air traffic is certainly heavier – downright crowded near the big cities – but this itself is somewhat more reassuring than flying through wilderness with not even an FSS station in range. There are more options on this route in case of weather related diversions – you can divert by hundreds of miles and still be over populated farmland with towns, cities and airports to land at. Being stuck in a northern Ontario mining town for three days waiting for weather or spare parts isn't much fun, especially if you have your spouse with you and promised a speedy journey to a more exotic destination. But if you can manage to tie down in Chicago or Minneapolis, you can turn that weather or mechanical delay into an unscheduled opportunity for fine dining and shopping. A trip within a trip! Small towns do have their charms but a big city always has something to keep the passengers occupied and happy while you fret over the weather forecasts or the mechanic's diagnosis. This is the kind of flexibility you need to ensure a fun filled and memorable vacation in a light aircraft.

In the next instalment, I'll talk about some of the other cross-country "fear factors" such as border crossing, flying through complex foreign airspace and what to expect in the way of support facilities along the way.

RAA

information call 250-843-7525.

Wanted

Wanted - 3/32 and 1/8 clecos, countersink dies, micro countersink drill attachment. Contact Don (519) 372-1383 or kinger@bmts.com

Looking for aluminum extrusions for the keels of floats. any parts or suggestions?

r_lewis@nf.sympatico.ca

Wanted to purchase good or rebuild able IO 540 for Steen Sky bolt project, also any airframe or parts for the same. Wanted to purchase FLYING OR PROJECT DR1 Fokker Tri Plane. OFFICE 1-705-653-4525 or davidcarlaw@prototyperesearch.com

Do you have an abandoned project or a non-flying aircraft, Zodiac or Challenger

II, sitting in a barn or hangar? I am interested in a low budget project. Ivan, ivank@ca.inter.net

Wanted: Airbox for Rotax 912. Contact Dennis Vogan at 416-606-0753.

Ads run for a maximum three issues depending on space available. Please direct all classified inquiries and ad cancellations to wolfpack@sentex.net

New In Canadian Skies



Fritz Rudolph's Zenith 701

Zenith 701 C-FCLP is Fritz Rudolph's second scratch-built aircraft. His first was a Christavia 4 which was finished in 1993 after about five years of part time work. The 701 was started in 2001 and took 2 1/2 years build time over a four year period of retirement. The airplane was built from plans.

Fritz used hand rivet pullers and a manual rivet squeezer that he built. His rib forms were steel-faced plywood. Fritz bought a Rotax 912S and Warp Drive propeller, from Zenair, as a package, a rather pricey package.

Fritz did the first flight on the 701 on 5 July 2005 and found the

landing characteristics very much different from the Christavia. Now that he has found that the 701 needs power all the way, he says that it is easier to land than the Christavia. There are about 36 hours on the 701 as of the end of the year. Fritz has plans for skis and for amphibious floats.

Send us Photos of your completed projects

Please include a brief description of your aircraft and any other details you want to include, and send us a colour print with it. Mail to:

*Recreational Aircraft
Association of Canada
13691 McLaughlin Rd, RR 1,
Cheltenham, ON L0P 1C0*

...or email us the information and a high resolution digital picture to: raac@inforamp.net



Marsden Skylark Update

Dave Marsden has been at it again with an updated version of his Skylark. The turtledeck and canopy have been modified somewhat as well as a sleeker cowling and an additional window. Right, we see the new aircraft beside the prototype.





RAA Chapters and Meetings Across Canada

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

ATLANTIC REGION

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

QUEBEC REGION

COTE NORD (BAIE COMEAU): Meeting times to be advised. Contact Pres. Gabriel Chouinard, 418-296-6180.

LES AILES FERMONTOISES (FERMONT): First Sunday 7:30 pm at 24 Ibergville, Fermont. Contact Pres. Serge Mihelic, 418-287-3340.

MONTREAL (LONGUEUIL): Chapter 415, Meeting in French second Wednesday at 8 pm, at CEGEP Edouard Montpetit 5555 Place de la Savane, St. Hubert, PQ. President Jacques Genest president@raa415.qc.ca (450) 447-9042

OUATOUAIS/GATINEAU: Every Saturday 9:00 am to noon at the restaurant 19 Aileron in the airport terminal. Contact Ms N.C. Kroft, Gatineau Airport, 819-669-0164.

ASSOC DES CONSTRUCTEURS D'AVIONS EXPERIMENTAUX DE QUEBEC (QUEBEC): Third Monday 7:30 pm at Les Ailes Quebecoises, Quebec City Airport. Contact Pres. Ray Fiset, 418-871-3781. rayfiset@qc.aira.com

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: Fourth Monday 7:30 pm, Lake Simcoe Regional Airport. Contact Treas. Gene Bemus 705-325-7585 gene@encode.com

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 the first Thursday of every month, at 7:30 p.m. except July and August, at the Collingwood Airport or at off-site locations as projects dictate. For more information, contact Keith Weston, 705-444-1422 or e-mail at kcweston@sympatico.ca

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 Editor Frank Ball fdnmeball@sympatico.ca 905 822-5371

HAMILTON: Second Friday 8:00 pm Months of Feb, April, June, Aug, Oct, Dec, at Hamilton Airport. Contact Pres. Brian Kenney, 905-336-5190

KENT FLYING MACHINES: First Tuesday 7:30 pm at various locations. Contact President, Mac Mazurek 519-692-5309 macmaz@mnsi.net

KITCHENER-WATERLOO: Meets the third Monday of each month in the upstairs meeting room of the cadet building at CYKE, except during the summer months when we have fly-ins instead. Please contact arankadd@rogers.com for information, or call 519-885-1155.

LONDON-ST. THOMAS: First Tuesday 7:30 pm. At the Air Force Association Building, London Airport. Contact President Angus McKenzie 519-652-2734 angus@lweb.net

MIDLAND-HURONIA: First Tuesday 7:30 pm Huronia Airport. Contact Secretary, Ted Aldred 705-526-4909

wings@csolve.net

NIAGARA REGION: Second Monday 7:30 pm at Niagara District Airport.

Contact Pres. Len Pettersen swedishcowboy29@aol.com

OSHAWADISTRICT: Last Monday at 7:30 pm at Oshawa Airport, 420 Wing RCAF Assoc. Contact President Chris Gardiner 905-668-5703 cgardn628@rogers.com

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

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

SAUGEEN: Third Saturday for breakfast at Hanover Airport. Contact: Ed Melanson 519-665-2161 meled@weightman.ca

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 8 pm at Ch 41 Hangar on north end of Brampton Airport Contact: President, Earl Trimble 905-787-8524 northernwind@aol.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 thesecond 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.com.

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. Contact Jill Oakes 204-261-1007 raa_wpg_executive@yahoo.com

SASKATCHEWAN

NORTH SASKATCHEWAN: Third Monday 7:30 pm at Westwind, Hangar #3. Contact President Garth Pippin for info at 306-666-4476

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 Calvin Thorne at 403 932-4325 or email: cbthorne@telus.net

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

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

MEDICINE HAT: Last Thursday of the month 7:30 pm RAAC Club Rooms, Airport. Contact Secretary, Boyne Lewis 403-527-9571 handblewis@thehat.ca

BRITISH COLUMBIA

ABBOTSFORD: Third Wednesday 7:30 pm Abbotsford Flying Club, Abbotsford Airport. Contact President, John Vlaka 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 Kelowna Yacht Club. Dinner at 6:00pm, meeting at 7:30pm Contact President, Cameron Bottrill 250-558-5551 moneypit@junction.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 RAACHAPTER580: Second Sunday 13:30 pm Sechelt Airport Clubhouse, sometimes members homes. Contact

Pres. Gene Hogan, 604-886-7645 CHAPTER 85 RAA (VANCOUVER): First Tuesday 8 pm Delta Heritage Airpark Clubhouse 4103-104th St., Delta, 596-3694. Contact Tim Baker 604-588-0333 timbakerzot@hotmail.com

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 - Dick Suttie Phone 250-374-6136 e-mail - richard_suttie@telus.net

ALASKA HIGHWAY: Third Wednesday of the month (except July & August) at 7:30 PM, alternating locations: even numbered months in Fort St. John and odd months in Dawson Creek. Phone Richard Laurence for location, details at 250-782-2421.

Chapter executives please advise of changes as they occur. For further information regarding chapter activities contact RAA Canada, Brampton Airport, 13691 McLaughlin Rd. Cheltenham, ON L0P 1C0 Tel. 905-838-1357, Fax 905-838-1359 or call toll free 1-800-387-1028

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