



Skywriter...



Monthly newsletter of the Calgary Ultralight Flying Club - COPA Flight 114

July 2007



Sunwest Aviation's beautifully restored Beech 18 Expeditor captured on short final at the Lacombe Fly-in on June 3.

REMINDER!

There will be no meetings for the month of July and August. The next general meeting will be held on Thursday, September 14. Have a GREAT SUMMER!

From The Cockpit

By Garrett Komm

How Many Planes Does a Guy Need?



The only thing that is constant... is change. Just when you think you have a complete plan, something comes along that you just can't resist. So it was, as I thought about my new garage and what I hoped to build in it. Along came an idea.

Why not have another plane that does everything that the other one can't?

We saw that Ken Beanlands had the engine removed from his recently purchased Wittman Tailwind project and had listed the rest of the airframe for sale in the Skywriter. I looked at the project and just how far along it was and it made perfect financial sense. The wings are complete and the fuse is covered, and with a few fixes it will be ready for paint.

There are a number of new features on this fifty year old design such as the fold down passenger rudder pedals. It also has a trim setup that is thumb



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adjustable.

The flaps and ailerons use concentric torque tubes with a sleeve so that space and controls are maximized. There are a couple of grief points, such as the torque tube connect points; they are built too short and are conflicting with the longerons. It is all fixable, and I still think that I have a great project on my hands. The legal side means that I need more training and bookwork, but that is the price of flying. On the other hand, until I find a motor I can continue to work on the GK-2; a high wing single place that will have a Continental up front. I am working on the shop now and look forward to seeing the project waiting each time I open the door with the clicker.

The blue trailer has had many jobs this last little while. It hauled the Wittman and Colin Cleland's new project. Also, Roy's Challenger was recovered after an engine out by the Cheadle interchange. Finally, the Merlin was towed from up north. I want to let every one know that the trailer is available to whoever wishes to use it. It's a single axle with a four pin light set up and a two inch trailer ball.

Make yourself available to attend many of the events scheduled for the summer. This is one of the busiest summers we've seen in a while. Thanks to Ted and Dave for helping out at the meetings.

Wishing you a great summer. →

Calgary Ultralight Flying Club

COPA Flight 114

Meetings are held on the second Thursday of every month, except July and August, starting 7:00 PM at the Northeast Armory, 1227 - 38 Avenue NE, Calgary.

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Skywriter

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CAVU Dreams

Photos and story by Ken Beanlands

WOW! What a month! First, I have to apologize for the lateness of this issue. I spent the last two weeks of June on the east coast helping my parents move from St. John's to Halifax; followed by helping my sister and her family load all their worldly possessions into a container for their move from Halifax to the Caribbean! Then we spent a week at the lake followed by a week long trip to Arlington!

Unfortunately, although I did spend a lot of time in airplanes this month, much of it was in the cattle car of a Westjet flight.

Before heading to the east coast, I took the prop off Chrissy to have it overhauled and re-pitched. I haven't been that pleased with the Ivo prop I've been using for the last year or so as it seems to be a lot rougher than the old McCauley metal prop. It's likely out of balance, but there doesn't seem to be any way to balance the prop since you have to disassemble it to remove it. When I performed the annual last month, I decided to put the metal prop back on. I was able to determine that the prop was about 2" too course and, since it's last overhaul was more than four years ago, I decided to have that done as well.

The local shop promised that if I got it in by Wednesday, they could have it done by the following Friday (about 10 days). This worked out well as I would be away over that time period. Renée got it into the shop on time for me, so I was surprised to hear it

This Yak 12 carries an incredible 1753 lbs! Hopefully you're not in a hurry as it creeps along at Ultralight speeds of 80 mph. This one can be purchased for \$46,000 USD.



My new prize. The boot cowl and firewall have been removed exposing the damage to the forward fuselage

wasn't done when I returned. Although this messed up my plans to take the plane to the lake, I was OK with it. We adjusted our plans to be back in town the following Friday to get the prop. Again the prop wasn't done. However, the shop scrambled to have it completed by 6 PM, and further resolved the issue by apologizing for the delay and providing me with a huge discount. I've always believed that the merit of a business can be gauged in how they handle mistakes and problems, these guys handled it in spades!

In between the week at the lake and the Arlington trip, I got in a flight from Carstairs to Lacombe, with a stop in Red Deer for good measure. Pat Munroe gave Glen Bishell a lift in his PA-20 Pacer and Jorn joined us in the C-120. Chrissy's performance with the re-pitched prop was outstanding. Cruise speeds have jumped from 95 mph to 110 mph at the same RPM. Climb and take-off have not been affected. I'm more than happy to pay the 6 lb weight penalty that the McCauley imposes.

At the stop in Red Deer, Jorn mentioned that he had recently purchased a Stinson 108 fuselage and that there were others there for sale. He directed me to a trio of fuselages resting forlornly under the bulk of a DC-3. Two were Stinsons and the third was an Aeronca 15AC Sedan. The Sedan immediately caught my attention. I've always appreciated the Sedan's attractive, slim lines that hide a cavernous 4-place cabin. Although underpowered with the original C-145, they really come alive with a Lycoming O-360 coupled with a constant speed prop.

This fuselage was relatively



The sleek, classic lines of the Aeronca Sedan are clearly evident on this example found at Arlington 2007.

completed missing only the seats, yokes, tail, wings and firewall forward. OK, so there was more missing than was there, but at \$500, I considered it a bargain. The following morning, equipped with my trusty 6'x12' trailer, I made my way to Red Deer and loaded up my new treasure. Of course, my wife's reaction was less enthusiastic. Renée is a very understanding wife when it comes to my aviation follies, but she could not fathom my interest in this smelly, rotting pile of pooh (not quite her term, but this is a family show).

The fuselage was still clad in its fabric, wood and aluminum covering and displayed a rather nasty bruise on the top of the firewall where the upper engine mount attaches. This cluster is composed of eight members that end with the mount point... and all eight members are bent. Fortunately, this shouldn't pose a great challenge to repair. The rest of the structure is sound and is, as far as I can determine, corrosion free. I'll be able to tell more after I remove the fabric.

Most of the missing parts will pose no problem to replace. The missing tail is not much different in construction than the Christavia so I should be able to fabricate a set from scratch. The landing gear has no machined parts and uses a bungee shock system with the cords tucked up in the belly. This will also be relatively easy to fabricate. At Arlington, I learned that many of the Sedans that have been converted to O-360's use a Piper Cherokee 180 cowling. That shouldn't be that hard to find. The engine mount can be fabricated from plans used in the O-360 conversion STC.

Of course, the big challenge will be the wings. I have two options here. First, I could find a set of original wings and rebuild/repair them. Second, I could build a set of wings from scratch or from a kit. As it turns out, the Bearhawk wings are a close match to the Aeronca wings with the exception that the Bearhawk has flaps and the Aeronca does not. The Aeronca wing area is 200 square feet whereas the Bearhawk is only 180.



The lighter side of aviation was well represented at Arlington 2007. Below is Murphy's long anticipated JDM-8 ultralight. An incredible display of STOL performance was displayed by the aircraft to the left!



The Aeronca wing is about 3' longer than the Bearhawk and is about 2.5" narrower. Spar spacing is within 1/2" and can easily be changed with a new front spar wing attach point on the fuselage. This would be an interesting solution...

Fortunately, Renée's misguided impression of the Aeronca made a 180° turn when we got to Arlington!

The trip to Arlington started on Tuesday afternoon at around 4 PM. We were driving our trusty GMC 1500 with our 19' camper in tow. We arranged to meet Troy Branch and his family at a Revlestone campground that evening. We were a bit late getting in but enjoyed a pleasant visit with them. The next day we drove the remaining 10 hours to Arlington. We arrived in the middle of a heat wave with temperatures exceeding 40°C at the Abbotsford border crossing. We waited in line for about an hour at customs. Unfortunately, the truck's water temperature started to creep up after about 20 minutes leaving us baking in the truck cab half an hour! Fortunately, the temperature in Arlington was under 30°C by the time we arrived, around 5 PM.

We did a quick survey of the field that evening where we found a web buddy, Bill Newby and his wife Rosemary lounging by their highly modified Christavia MK IV. Having never met them in person, I was quite surprised when Rosemary's initial reaction on seeing me was "Hey! We just saw you on YouTube!!! Your airplane is C-GREN!" This was amazing since I hadn't even said a word to them at that point!!! Sure enough, they had seen the video that Stu Simpson had produced of me and Chrissy last winter. Rosemary was very curious about winter flying as they had never experienced it in Santa Paula, CA. We had a very nice visit until well after dark.

The following morning turned up the highlight of the show for me. Sitting all alone in one of the rows was a pristine Aeronca 15AC Sedan! I pointed out the plane to Renée and asked her what she thought of it. I wasn't surprised when she exclaimed her admiration of the plane. That's when I told her that this was a Sedan... the same as the "pile of pooh" in the garage! Fortunately, the owner was sitting under the wing. I grilled him for about an hour on the details of the Sedan. Renée seemed to be very interested in the conversation and jumped in from time to time with comments and questions. When we finally walked away from the plane, Renée turned to me and said "Let's put the Buttercup on hold and build the Sedan first!" The rotting hulk in the garage was no longer a "pile of pooh"! I later returned with the camera and took over fifty pictures of the plane...

Shortly after leaving the Sedan, we were surprised to see a familiar RV-7A... C-GMMJ. A quick call to Ralph Inkster and I found out that he was hanging out with the High River EAA chapter crowd down in the



Ralph and Calvin head home to Calgary

campgrounds. Calvin Thorne had joined him for the flight. On our way back to the campgrounds we ran into Ed D'Antoni. By the time the sun went down, Ed D'Antoni, Ralph Inkster, Calvin Thorne, Troy Branch and his wife Jodi, Glen Clark Colin Cleland and his father and daughter were sitting around the campsite with Renée and I enjoying a few cold ones! What a great evening.

We finally left Arlington, but not before doing a little shopping both at Arlington and at the super duper outlet mall across the interstate! We departed at 6 AM and arrived back in Calgary at 9 PM that evening.

I've decided to cancel the Oshkosh my trip this year in favor of the CUFC Annual Air Adventure Tour! I'm sure there will be some great new stories to tell after that trip. →

Information Request

I've been a member of our fine group for a little over 2 years. In this time I started the construction of a Rag Wing Special II. It's been a little slow going as life intrudes but I'm just about finished the wing ribs.

About 16 months ago I bought a copy of X-Plane to use to make some performance related decisions such as engine size, gross weight, wing span etc. I've found out some very interesting things, most of which I'll discuss at another time. One thing I discovered was that the only airfields available in the X-Plane simulator are those registered with the TC. However, I thought it might be desirable to practice flights into some of the privately owned, non-registered fields.

X-Plane has offered to include up to about 30 additional unregistered fields in their new version to be released in the new year at no cost to us. With the permission of the respective field owners, all we have to do is supply the following field information: field name, GPS coordinates plus bearing, length, width and field surface type for each runway and taxi way.

If you wish to participate, please send me your field information at strobb@telus.net and I will pass it on to X-Plane. Please do this prior to the end of July 2007.

Steve Robberstad

HOW TIGHT IS RIGHT?

by Al Botting

Aircraft bolts and their proper application are fundamental to aircraft design, construction and maintenance. It's imperative that anyone working with nuts and bolts understand them correctly because any work on your aircraft usually involves nut and bolt fasteners.

Let's first discuss bolt quality. Use no bolts or nuts that are not AN/NAS/MS certified. No argument! SAE bolt specifications are excellent but the enforcement of the specs is not, so you can never be sure of what you're getting.

AN, MS and NAS hardware offer a range of fasteners manufactured and inspected to stringent standards. Dimensions are closely controlled, surfaces are fully finished and true, and the strength and hardness are consistent and dependable. They're not only strong, they're very tough; these bolts will bend before they break.

The aircraft application of these bolts is governed by the FAA-published ADVISORY CIRCULAR AC 43.13-1B thru -2A Combined. This advisory circular (AC) contains methods, techniques and practices acceptable to the regulating bodies for the inspection and repair of our civil aircraft, only when there are no applicable or superseding manufacturer's repair or maintenance instructions.

When it comes time to install these bolts and tighten nuts onto them, there are two ways to load the bolt. There is shear, which is a load perpendicular to the length of the bolt; and there is tension, which is a load pulling along the length of the bolt. Therefore, you'll see at least two tables in reference documents dealing with the limit loads available for a given bolt size and strength. Unless otherwise stated by the bolt manufacturer, consult the torque values for aircraft bolts listed on page 7-9 of AC 43.13-1B.

In the end, what keeps the bolted joint tight is the residual tensile stress established in the bolt during the tightening process. That's just a fancy way to say that tightening the nut on a bolt stretches the bolt. It also locks the male and female threads together. In actual practice, most bolts are improperly tightened. Fortunately, there are ways to counter improper torque settings. We'll discuss them shortly.

If a bolt is going to clamp parts together the bolt must be internally stressed in tension, otherwise the clamping force simply won't exist. In tightening a bolt to a specified torque value we're actually stretching

the bolt and loading it in tension to a predetermined level of stress. The level of installed tension (known as "preload") is more important to the strength and the fatigue resistance of the bolt than its ultimate strength.

A bolt that's properly preloaded, or stretched to its designated tension load, will much better resist other cyclic loads, like vibration. A bolt that's installed in an under-stressed condition may loosen under load and possibly fail. On the other hand, a bolt that's over-tightened (stretched beyond yield), will fail during installation, or will be weakened to the point where it'll fail prematurely in use from fatigue under cyclic stress (vibration). Another possibility is that over-torquing the nut and bolt will damage the parts they're attached to. This can also have disastrous consequences.

In the real world, it's not practical to properly clean and torque every nut and every bolt, every time. Further, since most of our applications involve only shear loads, in a great many cases it isn't even necessary.

What we're really looking for is a level of installed tensile stress that is just below the yield strength of the bolt material. Standard AN torque tables are usually compiled for plated fasteners without lubrication (dry threads).

There is also a shear stress developed in the bolt by the friction caused by tightening. But that stress goes away almost as soon as the act of tightening is completed. With no movement between the nut and bolt there's no friction and thus the shear stress evaporates. Naturally, the tension stress remains. This is the reason to always torque your bolts in steps – usually three steps – rather than just tightening the bolt to its final torque all at once. It is also the reason why most mechanics click the torque wrench twice on the final tightening operation.

The use of a torque wrench is the most common way of ensuring a tight joint. I recommend investing in a good quality torque wrench and ensuring its calibration regularly. For more critical applications like connecting rod bolts or head bolts, they may specify actually measuring the stretch of the bolt (micrometer) or using a specified angle torque device. This is likely beyond the scope of most of us in our type of flying and maintenance, though.

Another critical aspect of nut and bolt use is making sure these fasteners are safety locked. You must lock or safety all bolts and/or nuts, except self locking nuts. This is done in a number of ways. Parts subject to rotation, or in a spot where a self-locking nut might not be enough insurance, must be cotter-pinned. Naturally, this requires the use of castle nuts, which

have slots cut to match the hole in the bolt. An important note about using castle nuts: If you torque the nut to spec and the pin slots don't match up with the pin hole in the bolt, never loosen the nut to insert the pin. It won't hurt to tighten the nut that small amount beyond the specified torque so that they will line up.

Bolts without locking nuts must be safety wired, which is done at the bolt head. Safety wiring technique is a discussion for another day, but if you want to see an excellent example of safety wiring bolt heads look at how prop bolts are safetied. Most of the planes we fly use prop bolts with drilled heads to allow safety wire through.

Recommended for further detailed reading on this subject is the "Motorbooks International NUTS, BOLTS, FASTENERS and Plumbing Handbook", by Carroll Smith. It's a very complete guide to hardware for race and street cars (which use a lot of aircraft grade hardware and fittings).

If you are doing ANY work on your airplane you really should have a copy of AC 43.13-1B / 2A Acceptable Methods of Aircraft Repair. This book is available from bookstores (recommend Calgary Pilot Supply) for approximately \$30.00. You can also download the manual (in whole or in part) in PDF format from the FAA's website in the online Regulatory and Guidance Library. Also, make use of the knowledge of your fellow club members who have practical experience in construction and maintenance matters. →

Flying Events

July 21, Chestemere, AB, CULA Reunion and Pot-Luck at Glen Clarke's place. Please bring your own meat (ie. steak, chicken, etc), beverages and a side. Festivities start at 2:00 PM and continue until everyone leaves. If you wish to fly in, please land at Chestemere Kirkby as the Clarke strip will be closed for the event. For more information, contact Glen Clarke at (403)279-1036.

July 23 - 27, Chestemere, AB, 2007 CUFC Air Adventure Tour. Destination and route to be determined. For more information contact Stu Simpson bushmaster@shaw.ca

August 4-5 Lethbridge, AB - Lethbridge Air Show. The Lethbridge Sport Flyers is putting a club tent on site and has invited CUFC members to join them with their planes. If you plan to attend, please obtain registration information by calling Joe Harrington 403-381-0574 or Brian Wilson (403)345-6603.

August 12, Westlock, AB - Annual fly-in from 7 a.m to 11 a.m. Aircraft and pilot prizes available. For more information contact 780-349-5650.

August 12, Pincher Creek, AB - COPA Flight 77 annual fly in breakfast August 12. 8 am to 11 am. For more info call 403-627-7966.

August 18, Airdrie, AB - Airdrie Flying Club will be hosting an aviation Show & Shine and barbeque lunch. A poker run will be held in conjunction with the event. Visit <http://www.airdrieflyingclub.ca/showandshine.htm> for more info.

August 18, Cooking Lake, AB - Edmonton Airports is pleased to be hosting the 3rd annual open house & fly-in BBQ from 11 a.m. to 2:30 p.m. Rain or Shine! Free! For more information contact Edmonton Airports at fly-in@edmontonairports.com.

August 26, St. Albert, AB - Fred Herzog Memorial Fly In Breakfast from 7 a.m. to 11 a.m. at the St. Albert Airport, identifier CES3, coordinates N53 41 25 W113 41 37. For more information contact Ben Strafford at 780-458-1606 or email larandben@cruzinternet.com.

September 3, Stettler, AB - Stettler Flying Club's Annual Fly in Breakfast at 8:00 a.m. until 11:00 a.m. Labour Day Monday, at the Stettler Airport (EJ3). Contact Dwayne Sutton 403-742-4354, or, d_sutton@telus.net or Alternate; Kevin Falkenberg: 403-742-8058 or autox@telus.net.

September 8, Indus, AB, Fly in supper and neighbourhood appreciation day. Pot luck and deep fried Turkey. Indus Airport. Starting at 5:00 pm. Dinner at 5:30 Bring lawn chairs and enjoy the taxi ways. Five volunteers needed for crowd control. Please contact Garrett Komm at kommair@telusplanet.net for more information or if you can volunteer.

September 8, Lethbridge, AB - Lethbridge Sport Flyers, COPA Flight 24 annual Fly-In Breakfast at the Lethbridge County Airport, CYQL, AirWest Hangar 8:00 a.m. to 11:00 a.m. Everyone is welcome! For more info contact Joe Harrington 403-308-8343 or visit www.lethbridgesportflyers.com. Contact Person and Phone Number Joe Harrington 403 308-8343, Lethbridge-Sport-Flyers@telus.net.

September 8, Calgary, AB - Calgary Springbank Airport, Flight 14 Young Eagles Rally. Free flights for youth aged 8 through 17. Last year's event was a blast. Please help us make this year's event even better. Airplanes, pilots and ground personnel needed! To volunteer, or to register a youth for a ride, please contact. Contact Captain Chad Conrad 403-590-0577 or email captain@copaflight14.org

September 8, Rocky Mountain House, AB - Rocky Mountain House Flying Club is having a Fly-in Breakfast from 8 AM to noon at Rocky Mtn House AB. Rain date Sunday Sept 9. Everyone welcome. Contact Fred Nash 403 845-6247.

September 15, Okotoks, AB - Okotoks Air Ranch CFX2, N50 44 07 W113 56 05. Okotoks Flying Club COPA Flight 81 Annual fly-in breakfast from 8 a.m. to 12 p.m. Adults \$5, children under 12 yrs \$2. Contact Mark Ballard 403-203-2443 or mkbcorp@telus.net. Also please visit our web site for more details, <http://ofc.homelinux.org>. →

For Sale

1998 Lil buzzard - Rotax 582, 181 hours, 3- blade ground adjustable Ivo prop, tundra tires, hydraulic brakes, skis available. Contact Russ: umm48611@telus.net (07/07)

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upgrade. Full panel with GPS, custom cargo bags, and several extras. Dual helmet/headset with intercom and PTT also available. Always hangered. A very reliable airplane! \$12,500 Contact Darrell Booth email: dbooth1@shaw.ca or 938-3379 (02/07)

Beaver RX 550, 422 hr TTAF, 90 hr since total rebuild. 100hp Subaru, 3 blade warp drive prop, Mono 2000 amphib floats with electric retract, all surfaces in Cenconite with Polytone, extra wing tanks, carb heat, radio intercom, GPS, full gauges. Will consider interesting trade for single seat UL. Always hangered in Kaslo B.C. \$14,000.00. Contact: Russ White - umm48611@telus.net (09/06)

1987 Challenger II, 447 Rotax rebuilt, new fabric on fuselage, new upholstery, new wheel pants, panel, 157-TTSN, very clean airplane, can be seen at Glen Bishell's airstrip. \$13000. Ken Johnson - 546-2586 (06/06)

1998 Challenger II - Professionally built, only 170hrs on LES maintained & chromed exhaust recently installed. Beautiful paint, custom seats, ICom3, always hangered, \$27,000. Call Trey @ 698-4820 or email for photos - trey.petty@gmail.com (02/06)

89 single Seat Chinook: 447 rotax 348 TTSN 76 SOH. new wings and tail. John 239-0289 (11/05)

Volvo aluminum block V6 DOHC, supposedly rebuilt. Offers or \$250 delivered. Doug Fortune pentam@shaw.ca 284-3945 (11/05)

TEAM Tandem AirBike - pre-welded fuselage, c/w full set of plans and manuals for Single Place including welding plans and partial plans for Tandem. \$2000.00 obo. Dave Goldsmith, Calgary, (403) 289-9310 (09/05)→



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