



The News Letter of the Burlington Radio Control Modelers Club

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Editorial

This month, it is my privilege to present some notes and pictures from Tony Moore about his project to build a full size Skybolt - a beautiful biplane if ever I saw one.

My Editorial fun began in January 1999. Since then, thirty four editions of Skywords have been produced each with four pages. Last month saw the first two page edition when I ran out of time and material. This month's is a full sized edition thanks to Tony Moore and Bill Montgomery. I can but reiterate that Skywords is *your* newsletter and that I rely on submissions from you. At least let me know what you would like to see in your newsletter. Otherwise, it's like publishing into a vacuum with no idea of whether or not the newsletter is of any interest. Contact me by e-mail: Lawrence.Cragg@Sympatico.ca or by phone at 416-622-3705

Cheers, Lawrence.

The October Meeting

Wow! Jet Engines large and small were shown by Kevin McLeod & Ed Miedzybrocki with a fan jet thrown in for good measure. These engines have evolved to the point where, under micro-processor control with feedback from RPM and thermocouple sensors, many of the dangers and idiosyncracies associated with these engines have been effectively removed. Start up is controlled entirely by the processor as is throttle control - effectively producing a "fly by wire" module.

Fuel consumption is prodigious and the models shown included several fuel tanks designed to reduce changes in C of G as fuel is consumed.

The November Meeting

This is when we retrieve the Great Rubber Race trophy back from Hamilton. Be there!

**Thursday, November 28.
The Annual Challenge to Hamilton
The Great Rubber Race!**



Tony Moore's Magnificent Skybolt

2003 Renewals

It's that time of year again, time to renew your membership. Membership forms are available from our web site at <http://www.brcm.org/Application.PDF> (case sensitive) or go to our web site, select join and click on the BRCM application form.

Fees are as follows:

Open Membership	\$100.00
Senior Membership	\$85.00
Junior Membership	\$60.00

These fees were set at the general meeting held in January of this year.

The Full Size Skybolt Project

This from Tony Moore, your current secretary

In about 1979 my family decided that I needed a project. We had learned from a friend that a partly built Steen Skybolt was for sale up at Pearson Airport. We looked at it and decided that we should make this the project. There is an old saying, "Where ignorance is bliss 'tis folly to be wise," how true. Three and a half years later and \$65,000 later we had a completed aeroplane.

When we bought the aeroplane the primary structure was welded, Fuselage, tail feathers and undercarriage. There was also a supply of wood components for the wings and some steel fabrications for aileron bell cranks etc. and, of course, a set of plans.



We figured that the aeroplane was about 25% complete.

At the time we lived in a 100-year-old house in Mississauga. The garage was rotten and the basement flooded if it rained too long. We knocked down the garage and our neighbour, who was a builder, built us a new garage 26ft. long so that I could build a 25ft. wing in it.

The original welding had been done by a John Batchelor from Breslau, who was an artist with a welding torch. I had equipped myself for welding but,

having done several practice pieces, made the decision that John would also do the rest of the welding. I would design and fabricate a bunch of components and John would come to our house and spend a day welding. We had a few of these sessions. All the steel used in the aeroplane was a chrome-moly alloy.

I built jigs from Dexion in the basement and the garage to build the wings on. The bottom wings I could do in the basement and pass them out through a removed window when complete.

We attended Oshkosh each year and were able to examine Skybolts and other similar aeroplanes and talk to experts in many of the required fields of expertise which was a great help. We were also able to buy a number of components that would otherwise be very difficult to find. For example, Cockpit canopies and Air filter ducts for the engine.

The plans were very complete as far as the basic structure was concerned but after that, you were on your own. There would be an arrow pointing to the front of the aeroplane and a note saying "put an engine here", a bit further along the fuselage would be a note saying "put 2 cockpits here" and "put instrument panels here"

We decided to put a canopy on the rear cockpit so that we could fly in the winter, but left the front one open. It took me three months to figure out, construct and install the sliding canopy.

The aeroplane was fully instrumented in the rear cockpit but with just the basics in the front. We had 720 channel VHF radio. Loran C for navigation, Transponder and voice activated intercom.

We finished all the components at our home up to and including applying the silver dope. We applied up to 10 coats, rubbing down between each. The reason for the silver is two fold. One is to fill the weave in the fabric, but by far the most important is to provide a barrier to Ultra-violet light from the sun. Ultra-violet deteriorates the fabric very rapidly if not protected.

The original Skybolt design specified a 150hp. Engine. Our engine was a zero timed Lycoming IO. 540 6 cylinders, fuel injected, 250 hp. fitted with a new Hartzel propeller and was much heavier at 400 lbs. To help preserve the C of G the engine bearers were shortened. We also installed the Gel-Cell battery at the rear of the fuselage, which put the C of G in exactly the right place. The shortened bearers produced some problems as there is a bunch of stuff that goes between the engine and the firewall, things like inverted oil systems, vacuum pumps, magnetos, oil cooler and all the associated hoses and cables. We, in fact, had to pound a bulge in the firewall (galvanized steel) and shorten some studs to get the vacuum pump in. Building the cowling presents some problems, as you have to make it at least 1/2" bigger all round. This is because the engine moves quite a bit when it starts and stops. In addition, the inside of the cowling must be more or less air tight because the cooling air enters at the front, passes over the upper side of the cylinders and then passes down between the cylinders and exits somewhere under the engine. You achieve this air tightness by using baffles, which are attached to the engine and fill the



gap between the engine and the cowling. These baffles are made of aluminum and rubber. As we had fitted a Pitts nose bowl, they were able to supply a set of baffles.

Perhaps the most difficult single problem to solve was the installation of the Wheel Pants. Which was a Luscombe design. There are no straight lines anywhere in the pant or on the wheel except for the wheel rim. So you have no starting point at which to take your measurements. I think it took me about a month to complete the installation, but fortunately my guesses were bang on.

We had intended to install a used constant speed propeller, but were advised that most propellers will go to fine pitch on the loss of oil pressure. Being an aerobatic aeroplane there is always the chance that a temporary reduction of oil pressure allowing the propeller to go fine, could allow the engine to over speed. So, to stop this happening, we installed a feathering propeller, which has

a stop in it so it cannot actually feather. A feathering propeller will go to course pitch on a reduction of oil pressure.

After we had completed the Skybolt it was time for painting. She was loaded into a large truck and taken to Guelph Air Park. Peter Wilhelm did the painting and also the weight and balance certification. We assembled her at Peter's premises and after engine runs she was ready to go. Every thing was in the green on the instruments so on a beautiful Sunday morning in 1983, I think, one of my sons took off. All was well, no problems at all.

She had a top speed of about 150 mph and cruised at about 130 mph. There was a 39 imp. gal. 100 octane fuel tank in the fuselage with an additional 10 gal tank in the top wing center section. On full tanks she had about a 4 hr. range

It is interesting how much the building of this type of full size aircraft is similar to the way we build our larger RC models.

At the 1984 Canadian EAA get together at Orillia C-GGEG received 4 awards which included Grand Champion.



The Skybolt in Flight
Photographed by its builder: Tony Moore

Ye Olde Ultra Sport

This is an item picked up by Bill Montgomery from gok where.

Just a bit of trivia concerning the main reason the GP Ultrasport was such a hit with the sport flyers. At the Urbana GP facility the balsa kits are cut and packaged. Many of the balsa cutting machines there are designed and built in house by some very capable people. When the Kaos kit was in production its ribs were sanded to shape by a belt sander and a thick marine plywood template which I think was an original Bridi item. The template was guided against a steel plate as the stack of ribs worked against the sander. After thousands and thousands of cycles this template began to wear out against the steel plate. It developed a slight flat spot that showed up in the new ribs and so the new kits. When the GP Ultrasport was kitted the Kaos wing planform was used with minor changes. The designers at GP were aware of the very nice characteristics of the Kaos airfoil and so carefully digitallized the shape into Acad and then used it in several GP projects afterward. An L/D curve was plotted by M. Selig at the University of Il for this airfoil and it shows a distinct double crested curve which explains the Ultrasport's ability to "shift gears" and drop its tail to drag the model into landing with very little danger of stalling.

Bayview Status

This from Bill Montgomery

Hi All: Peter and I put the finishing touches on Bayview this morning and feel that the field is now ready for Winter flying. The grass has been cut in all of the areas necessary for flying (we will leave the 'burn' and West end until Spring as there are still lots of rocks and bricks to be removed before we can risk cutting it.) Peter also finished up the new frequency control board and mounting adapter. The mount is in place and the frequency board can

This airfoil is not the best for performance, it is too soft in its stall characteristics for good snapping performance in a full blown aerobatic model, but for sport flying it is wonderful. A thinned version was even used on the GP Patriot with good results. I was sad to see that another airfoil was used on the new Ultra-sport, but I expect that the model will be a very good flyer in any case. I just miss the old one.

Steve Gardner

Somethin' BIG

From Bill Montgomery who knows everything!

The SIG 'Somethin' Extra' (SE) seems to be the plane of choice for sport aerobatic fun flying these days. Well, a company in the US has come up with a 120 size version called 3D Freedom. Basically it is the SE scaled up to 67 inches with a RTF weight of around 9 lbs. Recommended engine is a 120 4 stroke. The Rudder and Elevators have dynamic counterbalances to reduce servo loads and all parts are laser cut. Kit is available from AK Models for \$125 US (www.ak-models.com). The complete construction manual is available in PDF format on their site.

be bolted on once the temporary field is shut down. We can use both the East and West startup areas (beyond the rubber pits mats) as long as the ground stays solid. If we get a thaw or wet period we probably want to stay off the West startup area as it is one of the few 'bare' areas on the field and could become muddy. Other 'jobs' that we have left until spring include painting the TX rack, new table tops, patio stones (could be delivered this winter once the ground freezes), runway markings, and a new wind sock.

All in all the field is looking very good. The grass cover is probably near 90%, which is better than we had on the old field.

The field will need a good rolling in the spring as we do have some areas with tire ruts. So, with the Board's approval, we would like to shut down the temporary field on **Saturday, November 23rd at 9 AM** and remove the field items. At that time we would also like to open Bayview (East) for the Winter season.

If anyone has any concerns, questions or comments please let us know. Hope to see as many people as possible on Saturday to help with the changeover and 'testing' of the new field <G>. Bill...



Where is it? Both instructor and student lost it in the sun and are still looking for it. Can you see it?