

Radio Controlled SoaringDigest

August 2006

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Front Cover: Scene at the Mississippi Valley Soaring Association Gateway Soaring Open '06. Glauco Lago releases Marc Gellart's Tragi 705 while Brian Molloy looks on with stop watch at the ready.
Canon EOS Digital Rebel, ISO 100, 1/400 sec, f 8.0, 70 mm
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Back Cover: Charles Frey launches Al Nephew's Encore into the front side lift at Parker Mountain. More about this photo on the back cover. **Photo by Don Vetter**

R/C Soaring Digest

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In the Air!

Last month we offered an *RCSD* issue archive CD to anyone who sent in photo IDs for Mark Nankivil's JR Aerotow article.

We received responses from several readers, identifying their own aircraft and those of others. See page 57 for the details.

Chris Boultinghouse has spent the last month attempting to set up his schedule so there's a contiguous chunk of time sufficiently large to vacuum bag his Genie wings. Unfortunately for *RCSD* readers, things did not work out, and we're going to have to wait until at least the next issue to see how Chris tackles this portion of the Genie construction process.

We're still working on our own Redwing XC, and should have a word or two about our progress next month. In the meantime, Bill attended an RC-HLG Clinic in Olympia a few weeks back. The decision to take a notebook was a good one, as clinic leaders Phil Pearson and Adam Weston supplied a large amount of information. This free clinic, a noncompetitive environment where individuals could learn the fine points of a specific aeromodeling activity, was put on by the Puget Sound Silent Fliers, and included a barbecue for those attending. The clinic concept is one which RC soaring clubs should consider.

As we're writing this, FAI sent out a notice that the organization has ratified a Class F (Model Aircraft) record, claim number 13877, for sub-class F5 Open (Aeroplane, Electric motor S, rechargeable sources of current. The new distance to goal and return record is 142.8 km, set by Raymond J.V. Cooper of Australia in Yarrowonga, Victoria, Australia. This record was set on May 27 of this year, and supersedes the previous record of 80.43 km, set 30 July 2005 by Jüri Laidna of Estonia.

Time to build another sailplane!

I've always enjoyed flying RES type models - there's something to flying a model sailplane set up this way that is both relaxing and challenging at the same time.

Over the last year, I've had less time to build due to our two year old son and some serious home remodeling projects, yet I needed to update some of my model fleet and find the time to go fly more in the coming flying season.

So the hunt was on for an RES model that would fit the bill for club contest type flying, the occasional regional event, and just plain fun flying.

After looking at a number of available models, I came to the conclusion that I wanted a model with a more traditional "full" fuselage, not a pod and boom type, and I kept coming back to look at the Soprano RES. The decision was sealed when I had a chance to meet Mark Miller, owner of Isthmus Models, at the 2005 LSF/AMA Soaring NATS and put my eyes and hands on a Soprano.

So late Fall I gave Mark a call and placed an order for a Soprano RES.

Not long after the phone call, DHL delivered a large box to my doorstep. Inside the box was a very well packed Soprano RES with wings and tail feathers in foam sleeves, well protected with additional bubble wrap, and a fuselage wrapped in bubble wrap along with a hard cardboard sleeve protecting the vertical

fin. The miscellaneous small parts were located in a single plastic bag. Also included was a large SOPRANO dry type transfer which could be placed on the wing for all to see.

DESCRIPTION:

A brief description of the airframe parts is in order.

The wing is a 3 piece set up with a flat constant chord center section 39.25 inches long and with a chord of 9.25 inches. The wing is of built up construction with a molded carbon/kevlar weave D-tube placed over balsa ribs and the covering appears to be Oracover that was taut as a drum - no sags to be found anywhere.

The main spar is made up of end grain balsa sheer webs capped with approximately 1/16 inch thick carbon fiber spar caps, all of this being neatly wrapped with kevlar thread.

The wing ribs aft of the spar are carbon fiber capped and the trailing edge is a carbon fiber molding. The ribs at both ends of the center section are carbon fiber faced as is the bottom of the center section where it will sit on the fuselage.

There is a large molded spoiler blade across most of the center section that is live hinged off of the back side of the spar. The center section weighs 12.5 ounces. There are generous balsa webs at the various corners of the wing panel and you are left with the impression that this is a very

strong, well built wing panel. The airfoil section used for the Soprano is the MH32 (8.71% thick at 30% chord with a camber of 2.37%). A comparison of the end rib of the center section to a print out of the MH32 using CompuFoil Pro appears to show the airfoil to be fairly accurate except right at and near the trailing edge which is not razor sharp as per the airfoil plot.

The outboard/tip panels are double tapered with the inboard sections built much like the center section. The joiner rod is fixed into the outboard panel and is a solid carbon fiber rod approximately 7/16" in diameter. There's a steel anti-rotation pin located aft on the face rib.

The outboard portion of the tip panel does away with the molded D-tube, and the spar is a carbon fiber tube, again all being covered with Oracover. There is a dihedral break where the panel adjoins the center section and again where the outboard panel transitions to the tip panel.

The outboard/tip panels weighed 6.1 and 6.2 ounces each and the fit of the panels to the center panel was excellent.

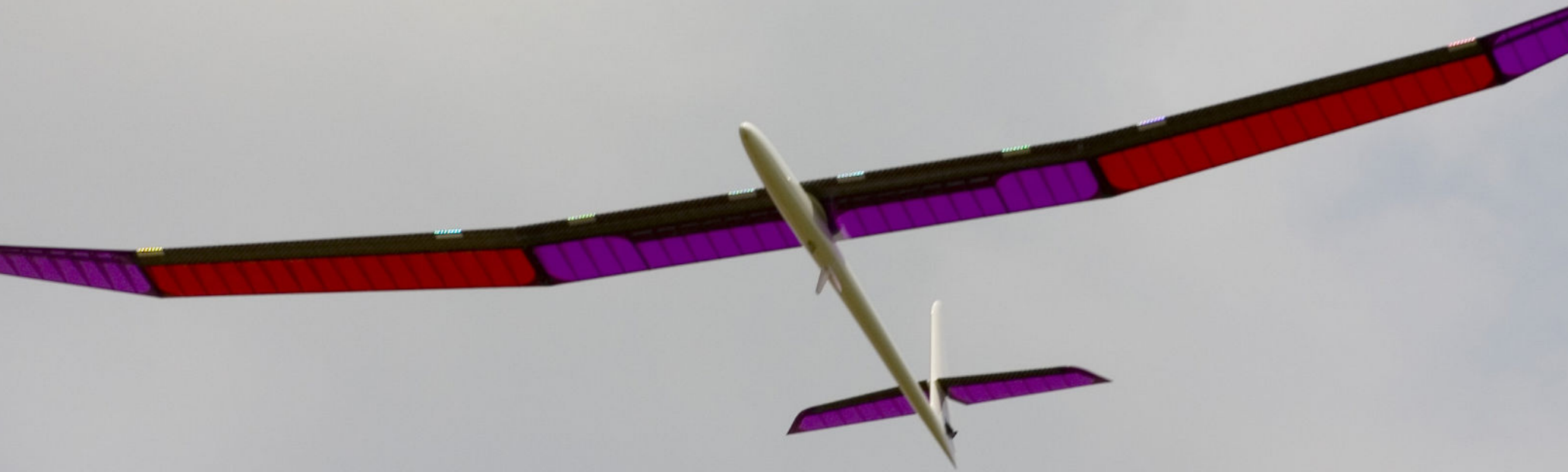
The horizontal stabilizers are constructed much like the wing with a carbon/Kevlar D-tube over carbon capped ribs. There are steel pivot rods which plug into the bellcrank within the vertical fin. These two stab halves weighed in at 1.4 ounces complete.

The fuselage consists of three parts - the main fuselage, a slide on nose cone and an

Isthmus Models

Soprano RES

A review by Mark Nankivil (nankivil@covad.net)



internal nose piece. All these parts have a white gelcoat finish and the parts fit and finish is excellent. Total weight of these three parts added up to 11.9 ounces.

The main fuselage is a single molding from just forward of the wing pylon back to the tail which is a nicely shaped vertical fin with a molded rudder.

The vertical fin is fiberglass and carbon fiber with what appears to be a thin foam sheet sandwich in the fin sides for added stiffness. The bellcrank for the horizontal stabilizer is already installed. The rudder is live hinged along the right side of the vertical fin and incorporates a wiper on the left side of the fin. There is a bit of balanced rudder area forward of the rudder hinge line. There is a small hatch on the left side of the fin for access to the installed bellcrank and the rudder pushrod will also come out of this opening. There is an included hatch cover which is a carbon fiber molding that incorporates a pushrod exit fairing.

The layup of the fuselage is carbon fiber and Kevlar to just aft of the wing pylon. There is a carbon fiber strip down both sides of the tail boom with the boom being primarily Kevlar.

The slide on nose cone is a Kevlar molding and the internal nose piece is a fiberglass/carbon fiber molding. It is left up to the builder to decide how to cut this section to fit the radio equipment you plan on using.

As for the miscellaneous parts, there are two Kevlar ballast tubes, a nicely machined towhook assembly, a rudder control horn, 3 M4x16mm bolts for attaching the wing to the fuselage, and the SOPRANO transfer. Mark Miller had e-mailed the manual to me earlier as a PDF file. You're left to supply the radio equipment, pushrods and materials to make up the spoiler linkage.

ASSEMBLY:

Putting all of the pieces together is quite straightforward. Layout of the radio equipment will be based on the size of the components you use. I used a 4 cell 1400mah NiCad battery, a pair of World Engines SL300 servos (equal to the JR 331 servo) for the rudder and elevator, a Hitec 555 receiver and an FMA S80 micro servo for the spoiler. For pushrods, I took a look through what I had stashed in my workshop and chose a 0.125 inch diameter carbon fiber tube for the elevator and a 0.06 inch diameter carbon fiber rod for the rudder.

The first step was marking and then carefully cutting the various openings to mount the radio equipment. I used my Dremel cordless tool with a carbide cutting bit to cut through the carbon fiber and fiberglass. After cutting all of the opening, the edges were carefully sanded to remove any sharp edges to save my fingers and keep from cutting any servo leads and the like. Spruce rails were glued to the

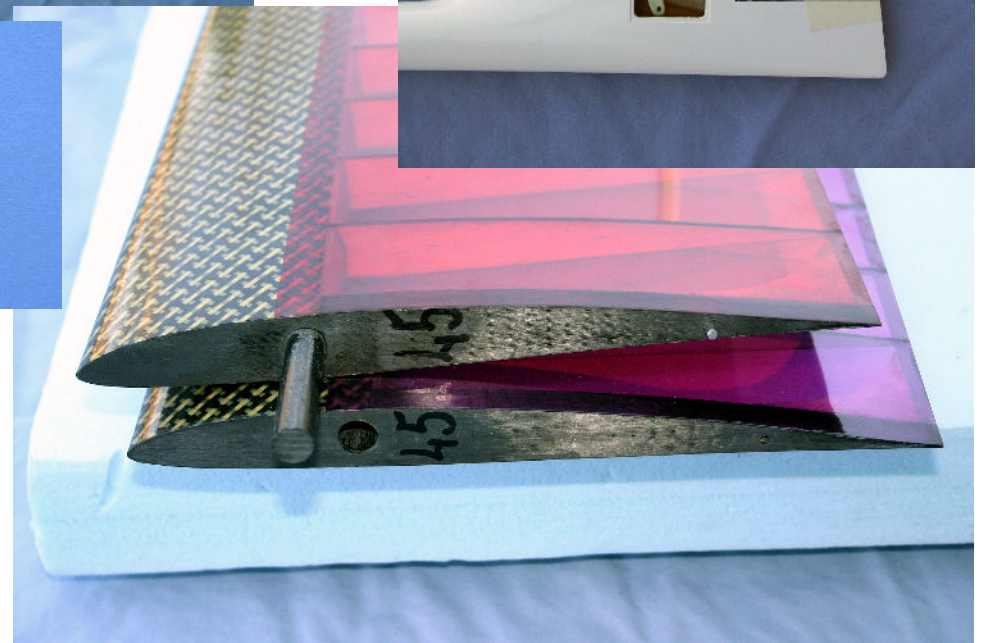
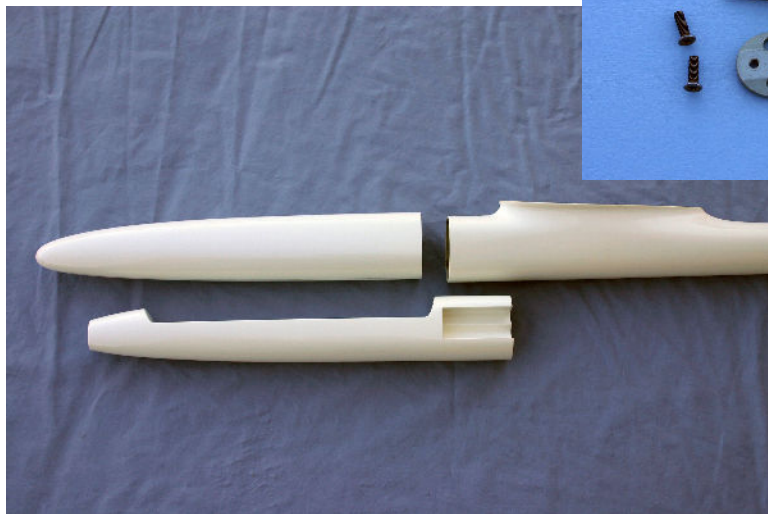
underside of the molding at the ends of the servo cutouts to allow for the servos to be mounted into place.

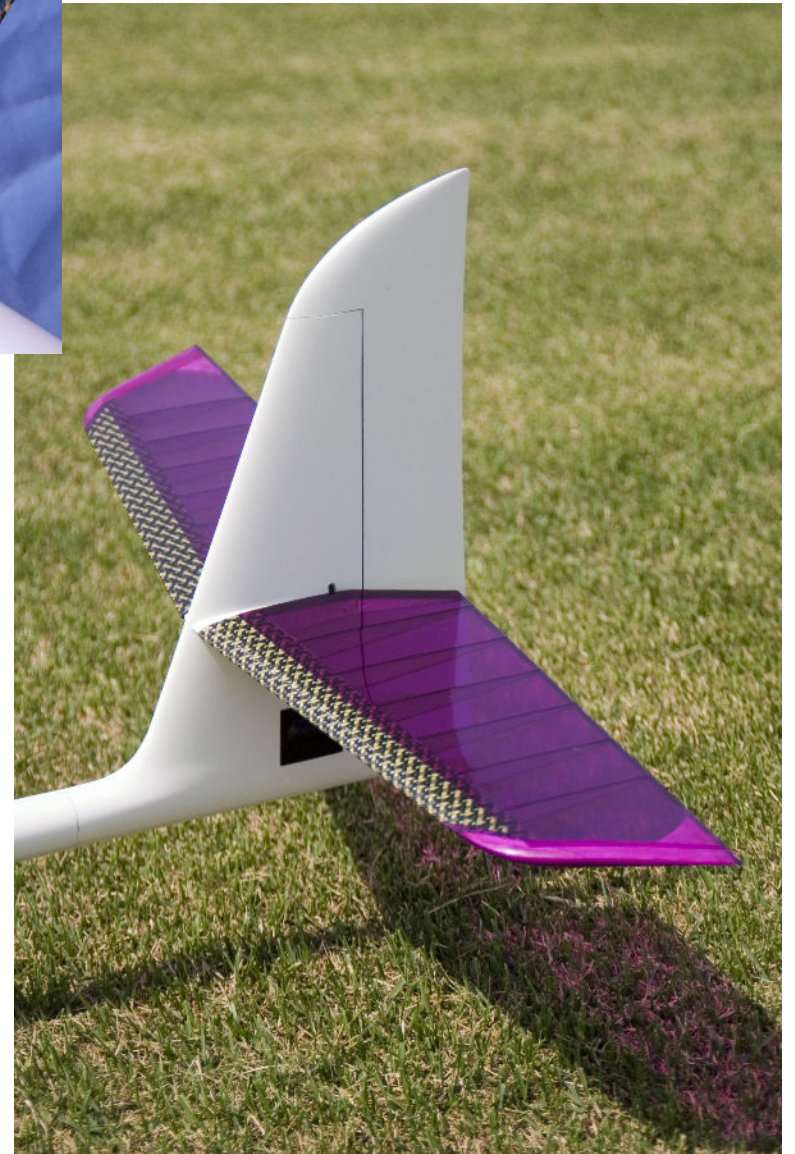
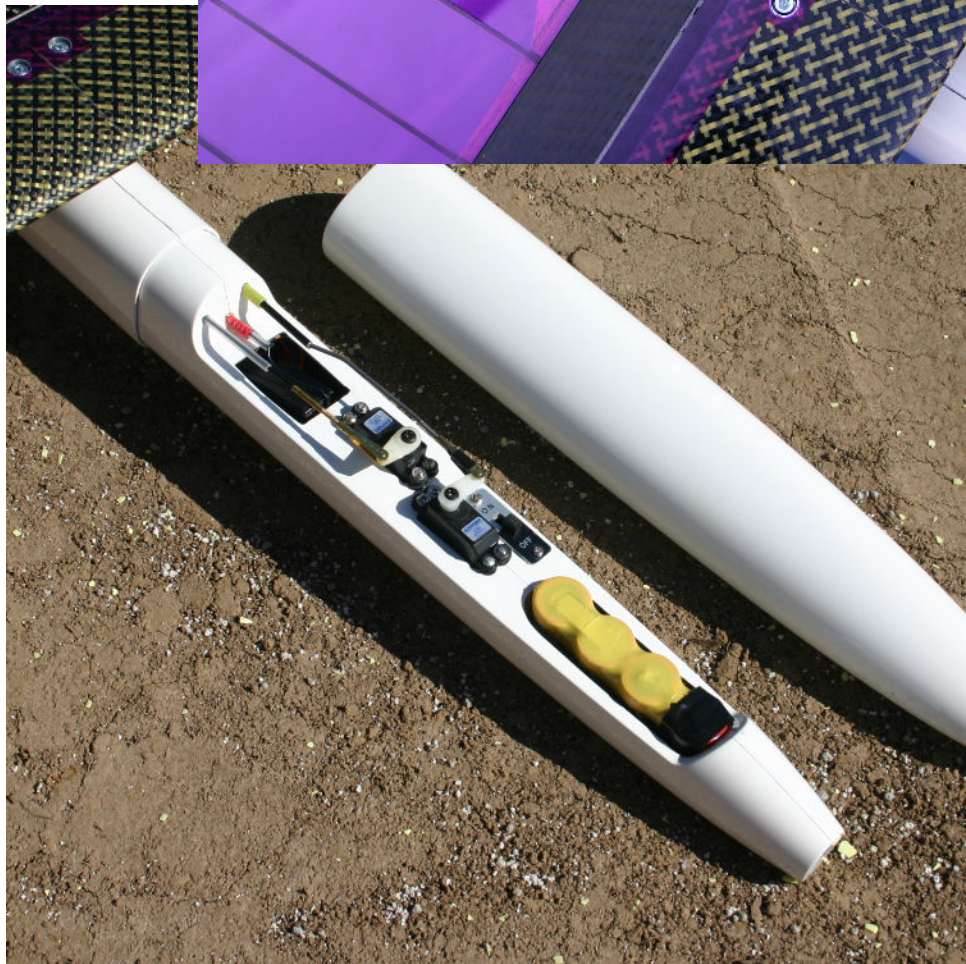
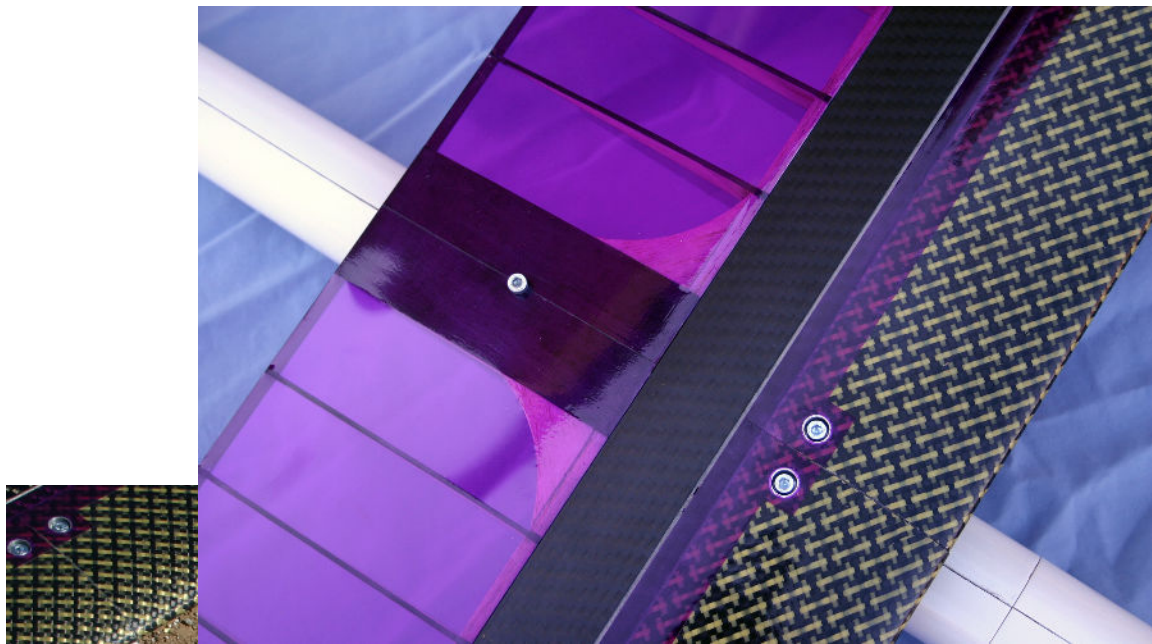
The next step was to trial fit the nose piece to the main fuselage then checking the fit by sliding on the nose cone and making sure the nose cone butted smoothly with the main fuselage.

When I was satisfied with the fit, I pulled the nose cone off and using a fine tip Sharpie pen, placed marks around the circumference of the nose piece collar where it overlaps with the main fuselage. This would tell me how far to push in the nose piece when it came time to glue it to the fuselage and also told me where to place the opening of the ballast tubes.

I then roughened up the collar of the nose piece so that I would have a good bond when it came time to glue it to the main fuselage. The final step for the nose piece was to glue in the two Kevlar ballast tubes. The ballast tubes must first be plugged on one end, which I did by first roughening up the inside surface and then gluing in a 1/4 inch thick disc of hard balsa. The ballast tubes were then glued into place on the nose piece using Pacer Zap-A-Dap-A-Goo, making sure that the ballast tube opening aligned with the pen marks placed earlier.

For the main fuselage, I first cut the slots for the towhook installation. The towhook has an internal plate which is attached to the external towhook by two screws for





which two slots need to be cut in the fuselage. I checked the recommended CG range for the Soprano and then measured the locations for making the slots so that I could keep the towhook within the range of adjustment for the CG.

I then chose to add a skeg from Superskeg to the model, using the V-Skeg (Part SK-4). This is an injection molded polyethylene piece with two screws included. The instruction sheet explains how to go about making up the mounting plate and also gives you a template for drilling the three holes to mount the skeg to the fuselage. The plywood mounting plate was glued inside the fuselage using Zap-A-Dap-A-Goo. Once that had cured, I drilled the three holes needed to mount the skeg and checked that the fit was good and properly centered.

The Soprano manual calls for using foam bulkheads for supporting the pushrods down the length of the tailboom. The drawings in the manual are not to scale but I simply measured up the cross section in the three locations where the foam would be located and, using a contour gauge, worked out the shape and cut the foam parts as needed. I then determined where the pushrods would pass through the foam, and glued in short sections of scrap pushrod housings through each foam bulkhead.

To help get them in the correct location within the fuselage, I made up the elevator pushrod (using the 0.125 inch diameter

carbon fiber tube) and attached it to the bellcrank in the fin. I then slid the foam bulkheads down the pushrod using a length of spruce marked with the distances I needed to push in each bulkhead.

This method worked well for me and gave me a slop free, low friction support for the pushrods.

With the bulkheads in place, I drilled out the nose piece to accept the pushrods and also installed the antenna tube. I also drilled two larger diameter holes in the wing saddle of the fuselage pylon to allow for future access to the internal towhook plate should I need to adjust it further and to give me access for the servo lead to the spoiler servo. I may also use one of the openings at a later date for an additional ballast tube.

With everything in place and final dry fit check of all parts, I then proceeded to glue the nose piece to the main fuselage, placing the epoxy only on the main fuselage so that as the nose piece was pushed into place, the epoxy would not end up on the exposed portion of the nose piece and leave excess epoxy where it would cause fit problems for the nose cone. I used the nose cone to ensure the nose piece was properly fitted and the nose cone would fit correctly when the epoxy had cured.

It was now time to move onto the wing. The only thing that needed to be done

with the wing was to fit the spoiler servo and its associated linkage. Timing was in my favor as the February 2006 issue of *R/C Soaring Digest* had just been posted and Lee Murray's article "Live Hinge Spoiler Installation in an Organic RES" addressed what I needed to do with the Soprano's set up. I duplicated Lee's set up from the article and had a nicely working spoiler in no time.

If you are looking for a different source than the Radio Shack magnet mentioned in Lee's article, I have found that there is a line of magnetic toys available at WalMart that may just do the trick. Called Magnetix, these are small but powerful magnets mounted in plastic sticks that, along with the provided ball bearings, make up into various geometric shapes. You can check out the product line at <www.roseart.com>. The magnets are easily removed from the plastic housing and are as powerful or nearly so as the magnet available from Radio Shack. The cost is considerably less as well.

The wing attachment bolts are actually two different sizes - M4x20mm for the two main wing bolts, and M4x16mm for the aft wing saddle location. Be careful to select the correct bolt size as the shorter bolt will not pick up the threads if used in the forward location.

To keep myself from making a mistake at the field, I went to my local hardware store and picked up some spares for the field box and standardized on the longer bolts for all

three locations on the wing/wing saddle. Mark Miller also suggests using a small fender washer under the aft bolt to spread the loads as needed.

For the ballast, I made a trip to the local gun shop and looked at reloading supplies, settling on .44 caliber lead balls used for muzzle loaders as a near perfect fit for the inside diameter of the Kevlar ballast tubes. The ones I bought are actually 0.451" in diameter and are a nice fit in the ballast tubes. Each ballast tube will accept eight ounces for a 16 ounce total. This increases the all up weight of the Soprano by 31%, with the wing loading topping out at 10 ounces/sq. ft.

You could probably improve on additional weight by using slugs but the balls load easily and quickly when I'm out at the flying field and I'm not worried about them hanging up in the tubes.

SET-UP:

In setting up the control throws, I used all of the available rudder movement - this is limited by the live hinge and wiper. The control horn mounts on the left or wiper side of the rudder and as such, there is the rudder thickness to take into consideration. I installed the control horn so that the linkage is 0.25" off of the surface. Be sure to mount the horn itself so that the rudder can fully deflect without the horn itself butting up against the vertical fin. I was able to get a full 1.00"

inch movement both ways, measured at the base of the rudder.

The elevator was set up with a range of 0.625" up and 0.375" down. The spoiler is rather large and mounted on the centerline, so it likely would have an impact on the tail surfaces. Initially I had it open 0.75" at the trailing edge and did not program elevator compensation into the radio.

TEST FLYING:

With the Soprano completed and ready to go, I then had nearly two months to wait before decent weather and my available time allowed me to head off to the field. First flights were simply to define the CG and get a feel for the Soprano. I started with the CG at 3.375" behind the wing leading edge and the towhook set at 3.25" behind the wing leading edge. Launches were good with no worries about zooming at the top. The speed range was impressive for an RES model though the MH32 is not meant to be flown like a flat bottom airfoil and needs to carry a bit more speed than a typical RES model. The spoiler is indeed very powerful, so be sure to take care when setting your Soprano up.

When it was time to pack up and head home, I was quite satisfied that I had a very good model with the Soprano.

My next trip to the field was on a day with little to no breeze, with most puffs being thermal induced. This allowed me to work on the CG and elevator settings. I settled

on a CG 3.5" aft of the leading edge of the wing and a towhook set 3.375" back from the leading edge of the wing

I found that the Soprano allowed me to cover a fair amount of sky looking for lift and once found, trim in some additional up elevator and work the thermal for best climb rate. I even managed to climb out from around 20 feet and sky out the Soprano, something that impressed me and the other club members watching at the field.

CONTEST PERFORMANCE:

Our club had its big weekend contest in mid-June and I decided to fly the Soprano on both days. The event is part of the Ohio Valley Soaring Society's (OVSS for short) Midwest series and, as such, there would be some very competent fliers in attendance. Saturday turned into a real blow out with winds building throughout the morning to over 20mph with gusts even higher. After two rounds, I called it quits as I was not willing to risk a new model in those blustery conditions. Sunday turned out to be a much better day with winds 7 to 15 m.p.h. through most of the day, with winds at altitude somewhat higher. I chose to fly with a half load of ballast which turned out to be a wise choice as it allowed the Soprano to range about in search of lift and still work the small patches when they were found.

With the man on man format being used for the contest, I managed a number of

Soprano RES

Span	122 inches
Area	990 square inches
Flying Weight	53 ounces
Wing Loading	7.7 ounces/sq. ft.



very good flights, and even buried a number of the leaders in a later round with a convincing max.

The Soprano and I finished the day in 4th place (and highest placing RES model) and I was very satisfied with the results considering the Soprano was a new model and I have flown very little so far this year.

SUMMARY:

The Soprano is a worthy competition RES ship that can also handle itself well as an Unlimited Class model in most conditions. I really like the looks of the model both on the ground and, of course, in the air. The overall quality of the Soprano is excellent, and in my opinion is well worth the price paid for the model. It's obviously not a "builder's" model, but for those of you like me who find their spare time a bit hard to find, then the Soprano might indeed fit the bill for you. I have found Mark Miller to be easy to contact and communicate with, and I feel that should I need further support for my Soprano at a later date, he'll be there to provide it.

See you at the flying field!

Isthmus Models
www.isthmusmodels.com

Landing skeg from
www.superskeg.com
P.O. Box 2091
Harrison, AR 72602



Maple Leaf Design *Encore*

Fabrication walk-through, Part 4

by Phil Pearson

The photo essay this month covers a novel method of producing accurate foam and balsa tail surfaces for the Encore glider.

Several years ago I purchased a computer controlled milling machine that uses a 2.5

horsepower variable speed router. ShopBot Tools Inc., in Durham, North Carolina, manufactures a cost effective line of CNC (Computer Numerically Controlled) milling machines and I chose the bench-top model.

I was guided in setting up the milling machine by my tool and die maker/machinist friend, Dennis Canuelle, and my friend Steven Seim encouraged and enlightened me in the ways of 3D drafting using the program Rhino.

<http://www.mapleleafdesign.com/encore.html>

Lest you think the milling machine assembly, and production of the first usable parts, occurred in a matter of minutes. let me say that I invested about 800 very intense hours initially before the first rudimentary usable parts were produced! Many problems were yet to manifest themselves, and in fact the whole exercise has been one of problem solving.

At first I thought prototyping in foam would be a good idea, and then milling the vacuum beds out of hard material would follow. As it worked out, Foamular 400 insulation foam has enough compressive strength and is stable enough to be used many times over for vacuum beds. If a bed is destroyed it is a simple and inexpensive matter to retool a replacement.

Aligning the cores in the soft foam vacuum beds was a problem solved by simply gluing a hard spot such as 1/64" plywood with a reference hole that mated with brass tubes set in the vacuum table.

Vacuum is supplied by a Fein shop-vac with bypass cooling

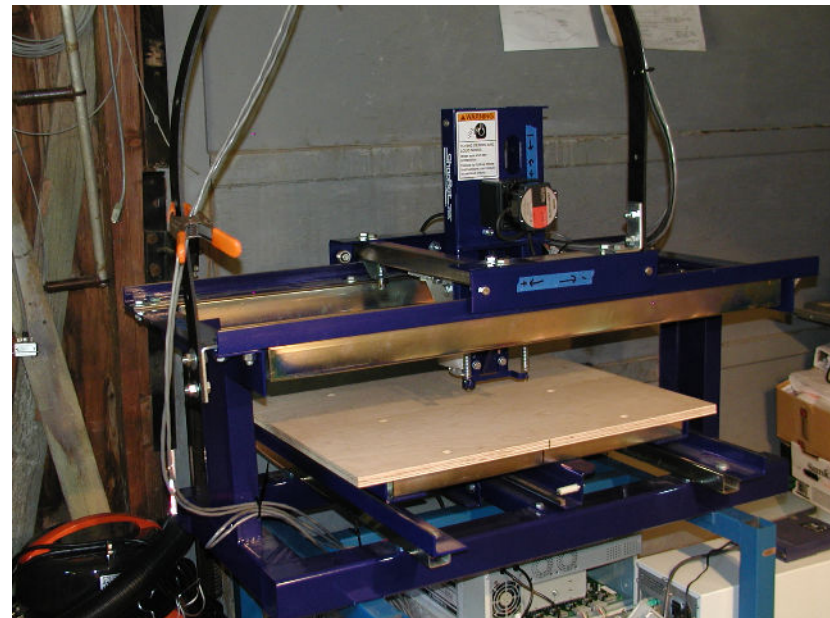
allowing continuous operation.

Soon after the first tail-surface parts were produced I was successfully milling wing cores.

All flight surfaces for the Encore are now CNC milled, and then vacuum bagged. This method has allowed a variety of airfoils and plan forms to be prototyped. The resulting wing has a consistent airfoil and the robustness of a solid foam core wing.

The CNC process is perfect for modular design, allowing most of the parts of the Encore to be interchangeable with earlier versions.

Next month, CNC milling and vacuum bagging of Encore wings will be featured.



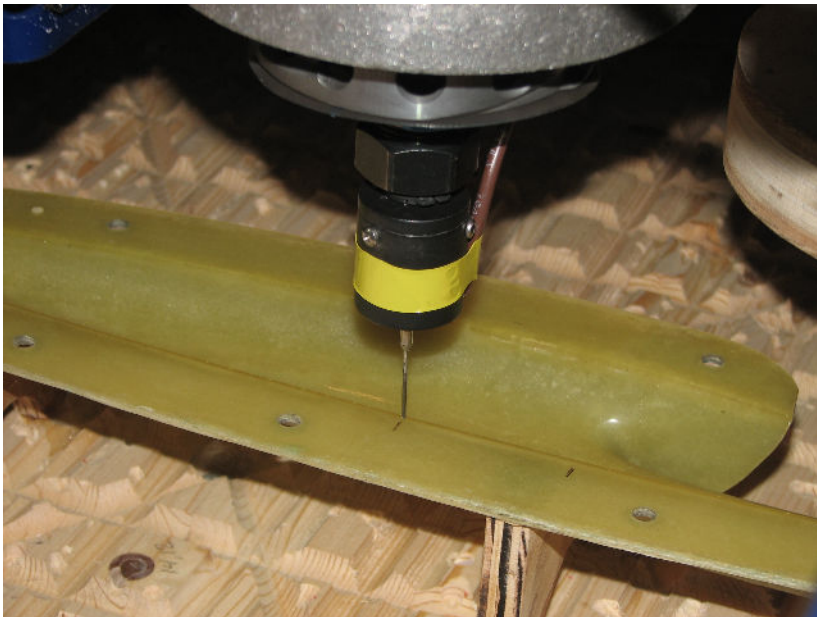
Computer Numerically Controlled, CNC, 3 axis mill used for 3-D milling of Encore flying surfaces and miscellaneous parts. 2.5 Hp Makita variable speed router is used for milling. This mill is a Shopbot, bench-top model, with a working area of 33"x24"x6". This particular model utilizes a DOS format for programming. The computer uses a 450 MHz Pentium II processor and runs Windows 98. The Jet "Dust Dog" dust collector with the pleated filter is visible in the background.



Left: Foam horizontal stabilizers with airfoils are easily cut with the mill.



Right: Air foiled elliptical balsa parts milled with the Shopbot mill.



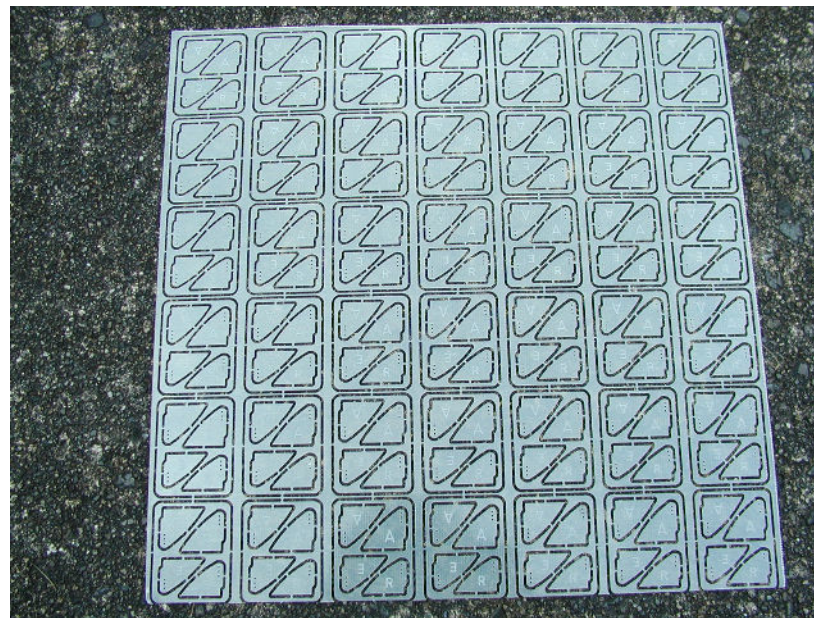
Left: A digitizing probe (giving x, y, and z for any surface) can be used for duplication of parts, information for drawing, or quality control checking actual measurements of parts.



Right: A typical array of small balsa parts.



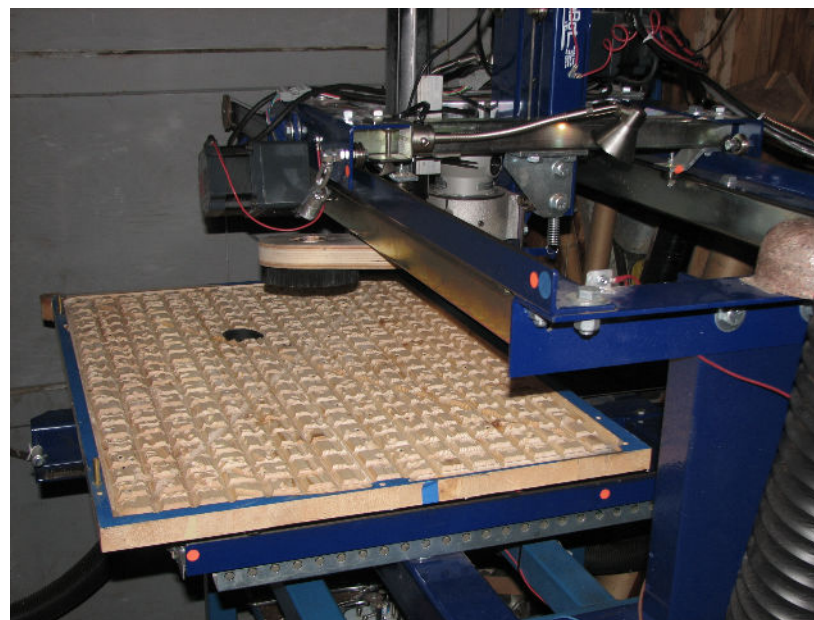
Left: Balsa stabilizer platforms.

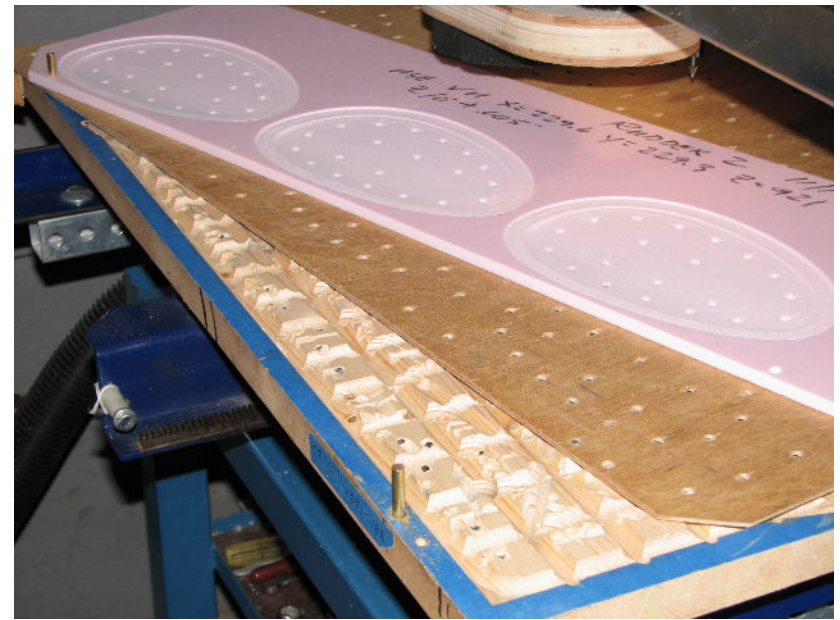


Right: Control horns milled from G-10 circuit board material.

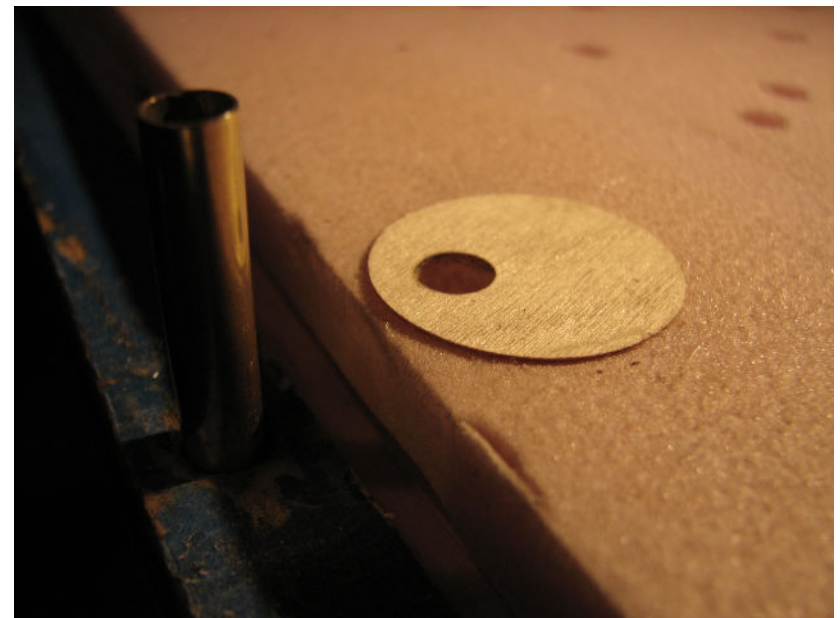


Left: Different colored foam inserts milled by Steven Seim demonstrate potential for logos and interesting translucent decorations.
Right: A 5/4" thick pine board, glued together from smaller planks is used for the table.

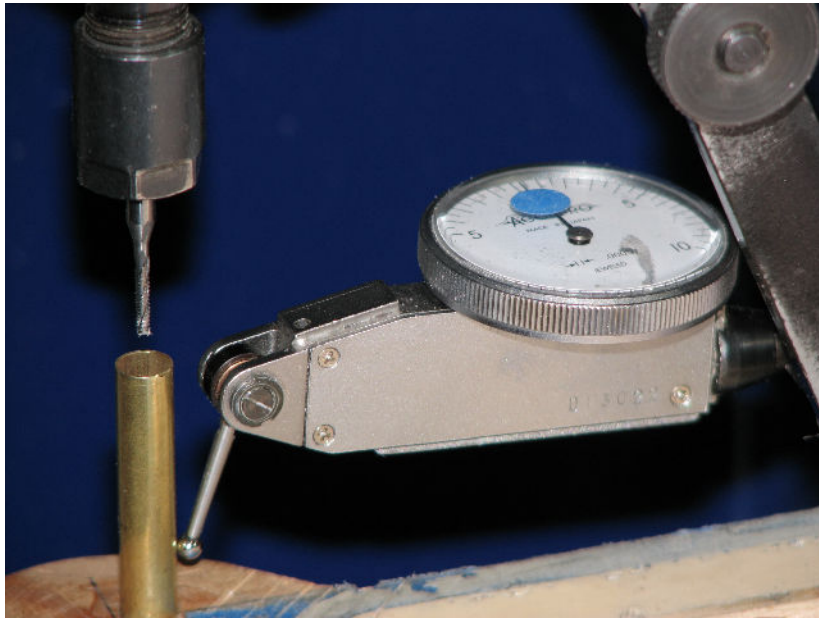




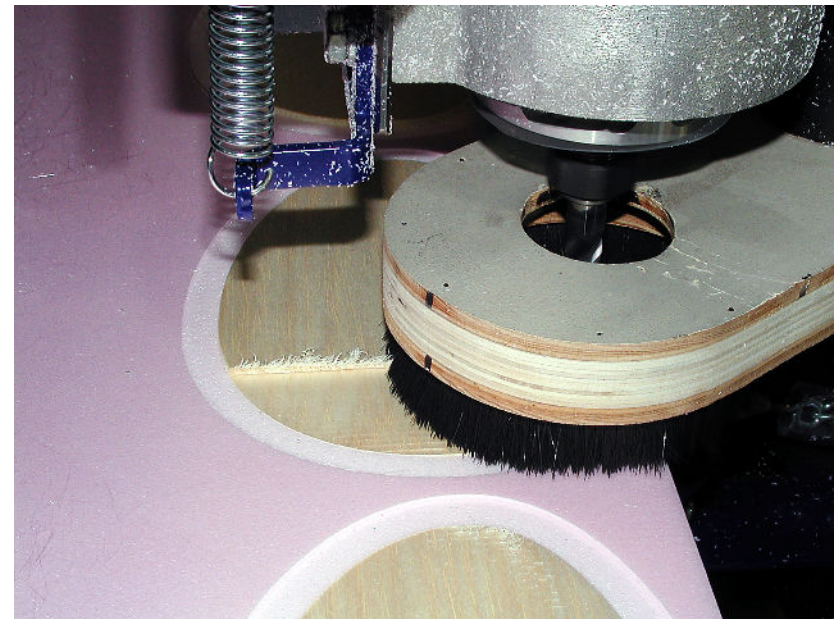
Left: Grooves are milled in the table for vacuum channels. Right: 1/4" thick door skin plywood with appropriately spaced holes is used for a sacrificial tabletop. Foamular 400 foam is used for female vacuum beds. Vertical fin cavities are pictured.



Left: Registration of foam beds is assured with the use of 1/64" plywood and 1/4" OD brass tubes. The plywood is held in place with permanent contact-spray glue. Right: Close-up of plywood registration disk.



Left: The mill is calibrated using a dial gauge mounted on the router spindle and rotated around a locator pin or tooling ball. The mill is then manually recentered (or zeroed). Right: The first surface of a vertical fin array is milled from a flat balsa sheet that is held in place with vacuum.

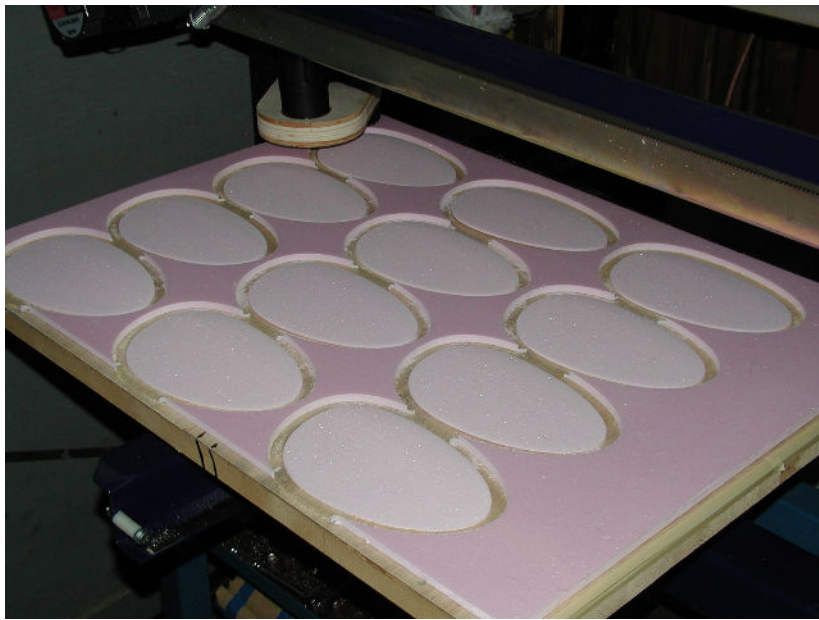


The second surface of the vertical fin is then milled while positioned in a female bed and held in place with vacuum.

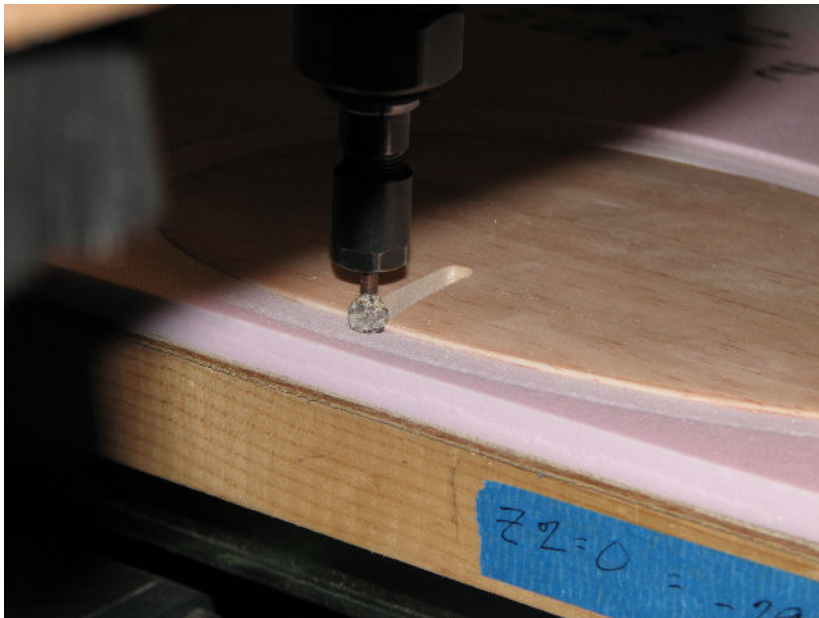


Left: Completed vertical fin array still positioned in the foam bed after milling.

Right: Vertical fins removed from the foam beds, both sides are now milled. The photo shows vacuum holes in female foam bed.



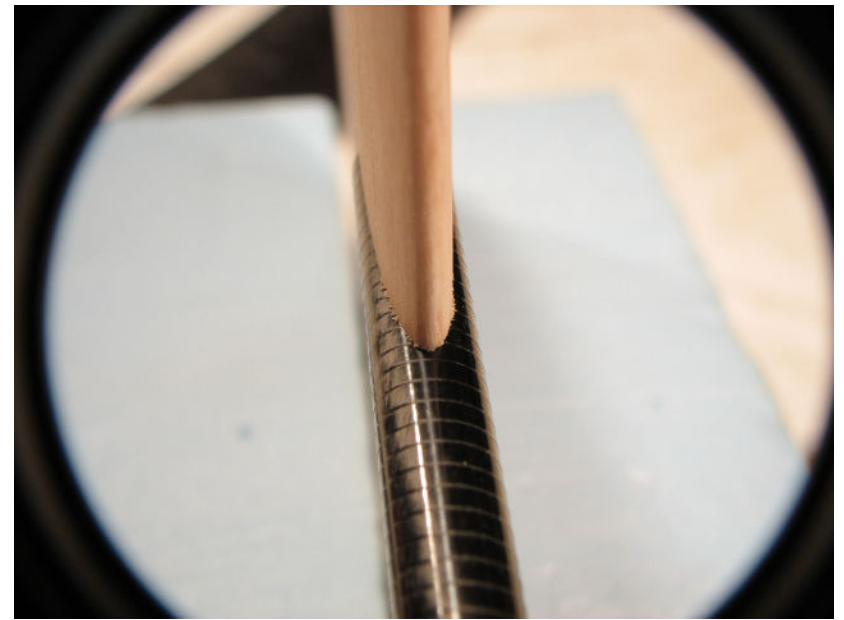
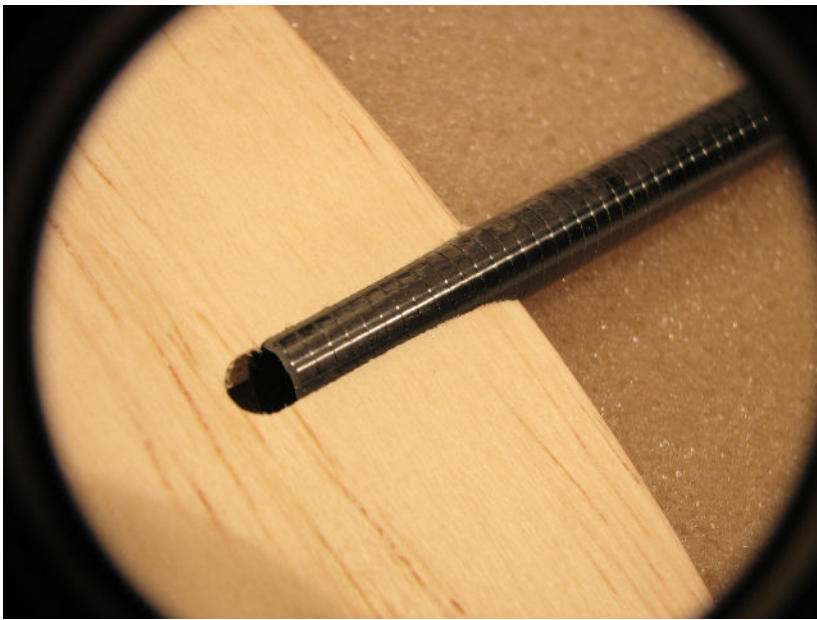
Left: Many possibilities exist for milling large arrays of parts using CNC technology. Right: Tail-boom slot being routed in vertical fin.



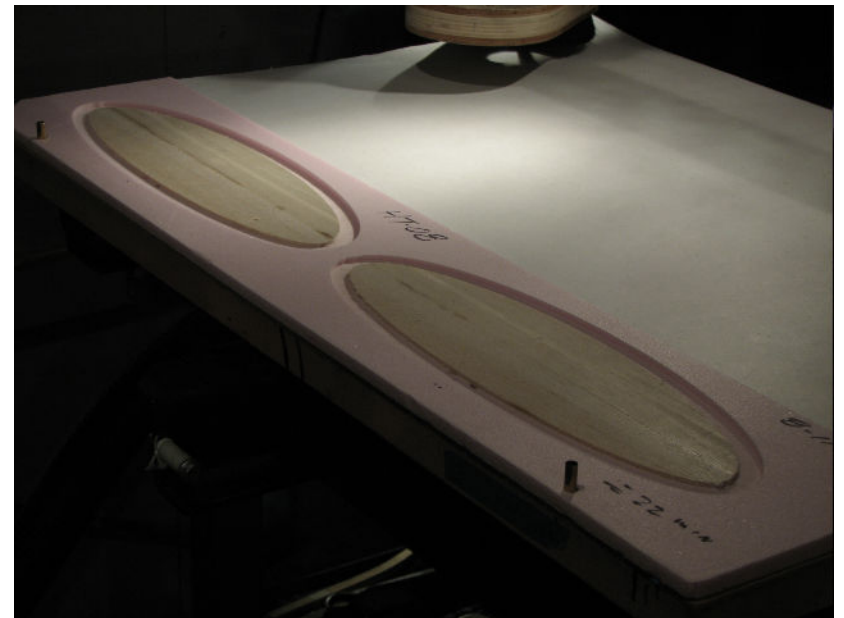
Left: Close-up of “lollipop” ball cutter.



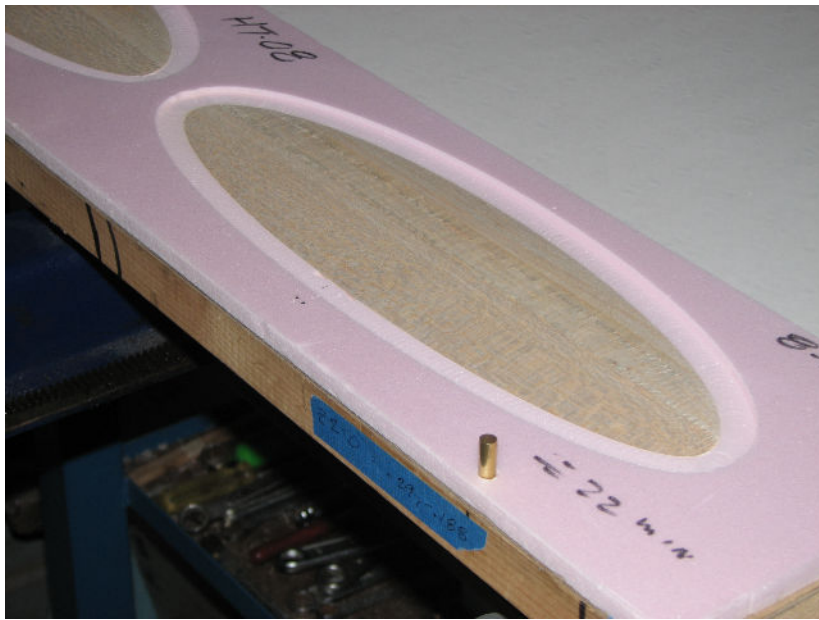
Right: Close-up of slot with radius sides to conform to tail-boom.



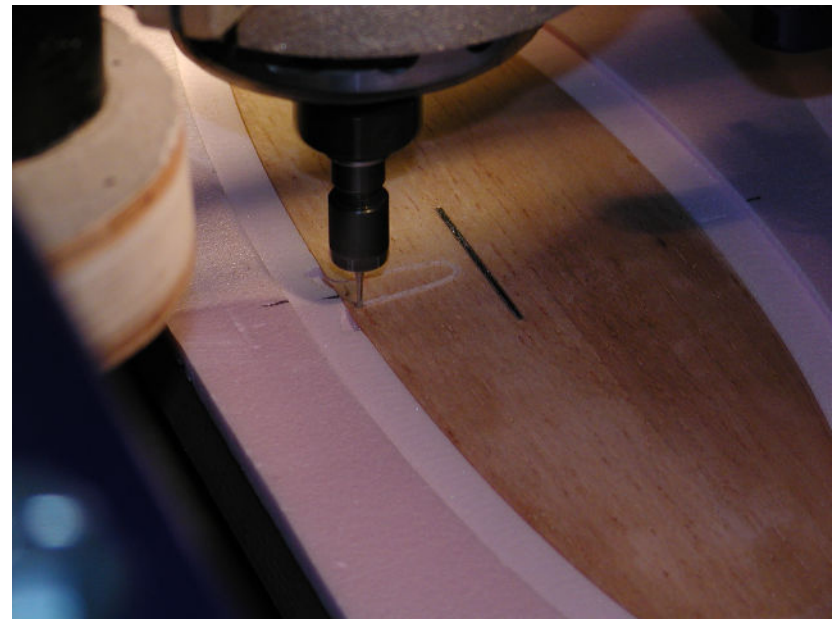
Left: Press fit of boom allows easy rotational adjustment to align vertically. Right: Close-up showing fit to tail-boom before gluing.



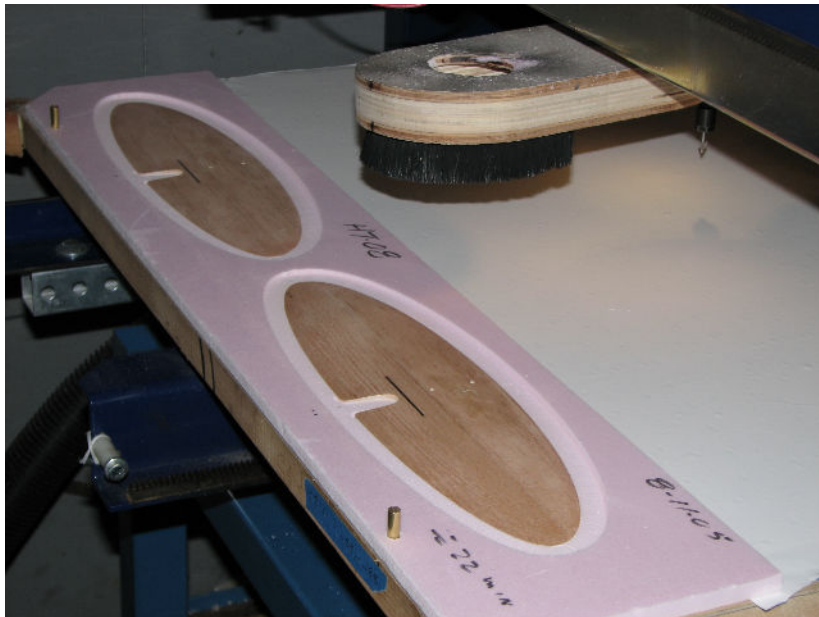
Left: Balsa surfaces are finished with sandpaper to remove tooling marks and any flashing. MGS resin is rubbed into the wood and the excess is buffed off. The resin contains an alcohol based stain to tone the wood to the same color. The first three parts in the photo have not been treated with resin. Right: Horizontal balsa stabilizers located in female vacuum bed for milling of the second surface.



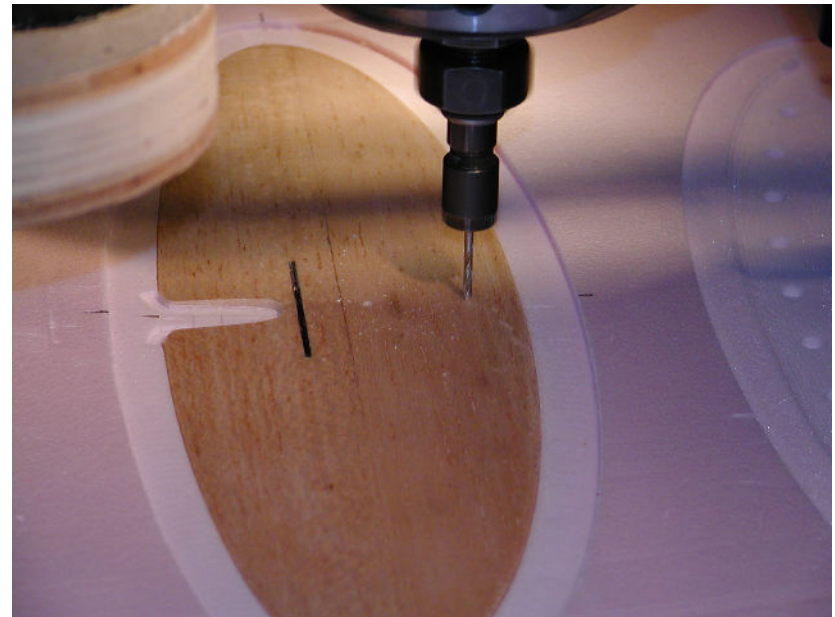
Left: Second surface milled.



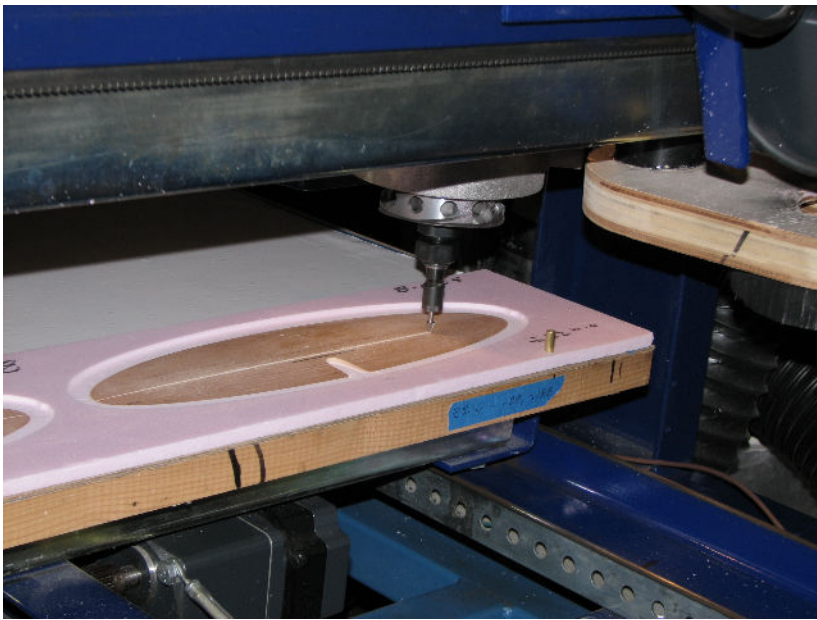
Right: Routing of elevator notch on resin sealed stabilizer.



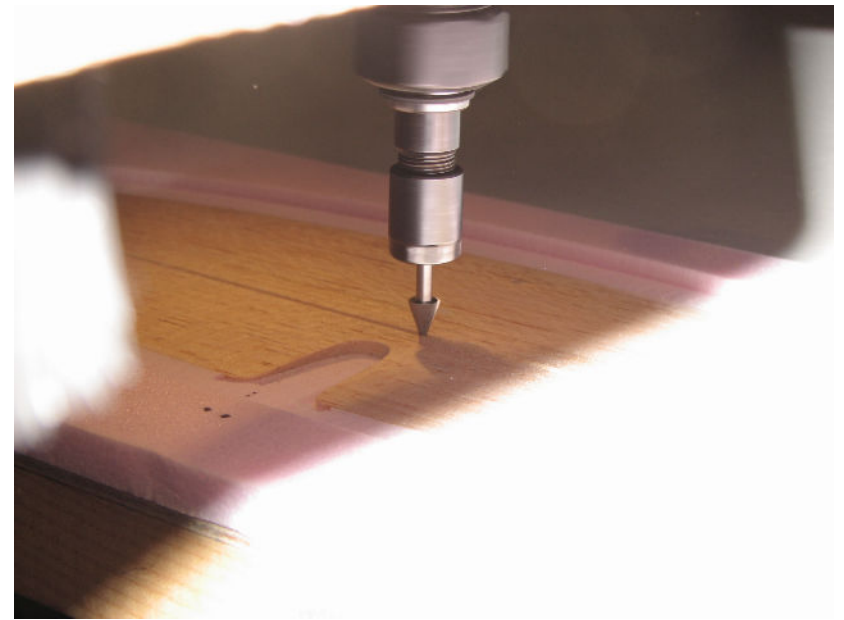
Left: Overview of notched stabilizers.



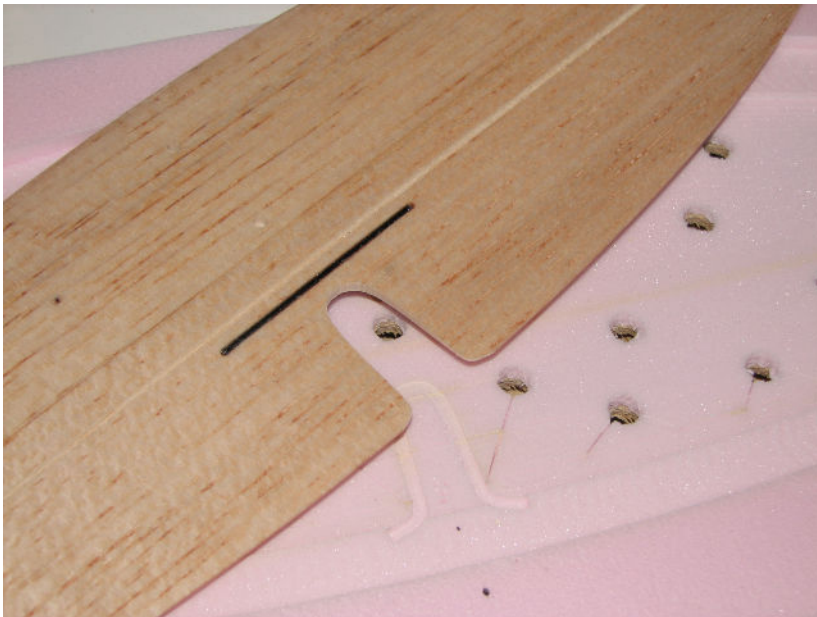
Right: Mounting holes being milled in horizontal stabilizers.



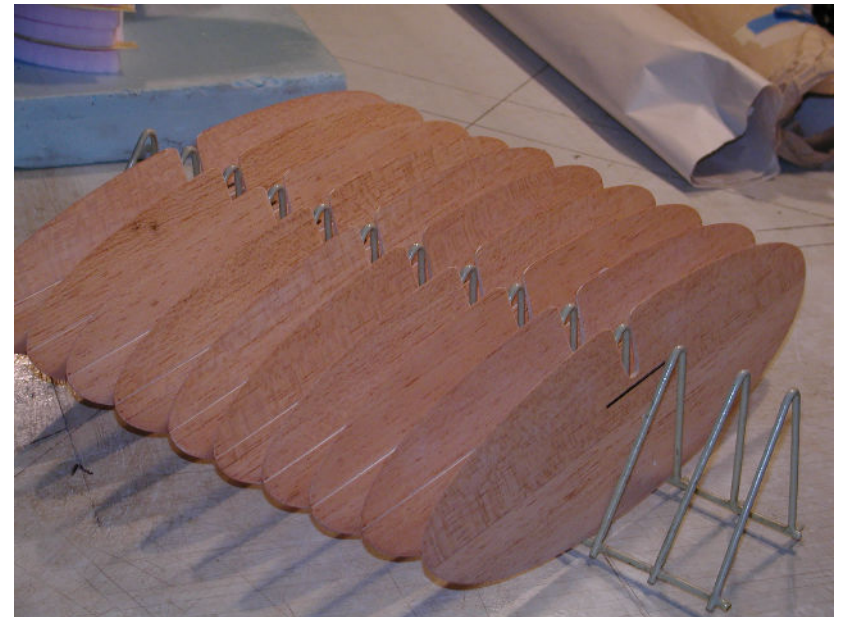
Left: Hinge line milled on one surface.



Right: Close-up of hinge line cutter tool.



Left: Close-up of finished stabilizer and vacuum bed.



Right: Horizontal stabilizers ready for shipment.

F3J WORLD CHAMPS 2006, MARTIN, SLOVAKIA

Prospects Gossip Column, July 2006

by "Uncle Sydney," Sydney Lenssen (sydney.lenssen@virgin.net)

Wurts, Kohout, Borst, Hobby, Upton, Corfu, Lappeenranta, Red Deer - all are champions or places of previous F3J world championships - soon to be followed by Martin and who? At the end of this month, 88 senior and 41 junior pilots, cream of the model soaring world, will gather in Slovakia to do their best against each other with their latest "pride and joy", trannie thumbs and fingers and thermal sniffing talents, to decide another champion. Sadly one previous winner, Jan Kohout, won't be competing as he's not in the Czech team, but I hope he will come. Who wouldn't bet that 2006 might see the first F3J champion to be crowned twice?

Good authority, no less than maestro Jaro Muller, says that Martin's airfield will provide the perfect flying site; that the Slovak National Aeroclub of General M.R.Stefanik, the Model Union of Slovakia and the RC Model Club Martin, led by contest director Jaroslav Kostan, will lay on per-

fect arrangements; and the 2006 world championships will be the best ever.

Martin itself, a jewel of Slovakia's tourism, is squeezed between National Parks and on the Turiec River. It centres on the country's main north-south, east-west routes, and more importantly, it brews strong beer and sparkling gossip to fill the F3J 2006 WC Marquee in the town square each night. Weather should be sunny and stable, between 25 and 35 degrees C. But as all thermal soarers know, forecasters and weather records mean nothing as you wait for the countdown to working time with line tensioned.

What's in store?

Year 2006 seems vintage for new models. The last two WCs had a sprinkling of significant advances, but not the pivotal designs which set everyone talking. Truth is that any one of today's top dozen F3J designs can be flown to win by a good

pilot. Recent dominant models have been Pike Superior and HKM Sharon.

This year we shall see the new Pike Perfect, Vision and Shadow, Xperience Pro, Supra, Espada and perhaps something different from Russia. Those we know originated last year or earlier, but this time they are competing seriously. Will they overtake the established reputations?

Samba, the Vostrel family and Philip Kolb have invested more time and promotion in the Pike Perfect than any other model to date, with full accounts of how wing shapes and profiles were determined, graphs and charts, with Philip setting the criteria needed by future top pilots. The Vostrels are determined to stay ahead, labour cost advantages are slipping away and victorious models are the only answer.

Those lucky pilots who got early production models have already competed, not always successfully, with the new bigger better Pike. The Samba waiting list is

reputedly well into next year. I am confident that the Perfect will outperform the Superior eventually, but results have not been convincing as yet.

Hottest new models stem from Bogo and Nikolay - Bogo Stempihar of Mibo Modeli in Slovenia and Nikolay Nikolov of NAN Models in Bulgaria - with their Vision, Xperience and Shadow range. For those who don't know, Bulgaria is a cheaper place today to mould quality models. Mibo, after several years working with Graupner making Soarmasters and other models, got together with the Slovenian team and Dr. Helmut Quabeck to design the next generation of high performance gliders. Bogo and Nikolay work closely.

The new Shadow is simply a larger version of Xperience and first appeared in Italy this April. Bogo thought that a larger wingspan might be needed, and perhaps feared the bigger Pike Perfect. But this season's question is which of the two, Vision or Xperience, will prove best.

In Forli, Tony Vale and I as two sole Brits were lucky enough to fly with the Feigl family in the "Bavarian Eagles" team, the whole team reaching the flyoff except for me! Sebastian was flying the Xperience and Benedikt the Vision. Both of them had assured flyoff places with one round still to fly, so they challenged each other to launch in less than two seconds. Both got 9 min-

utes 58 seconds plus after launches barely 30m high.

Their opinions of the models: both great launchers with fantastic zooms, Vision with its HQW2,5 and HQW 3,0 at the tips is gentler and easier to trim and fly, but the Xperience with its HN350s airfoil is more agile and exciting. Latest news is that Benedikt has switched to match his brother; I've still to find out why.

Really surprising is that both models have become prime choice of many pilots around the world so quickly. Good websites and detailed descriptions of the models, as created by Samba and Mibo, pay dividends.

Another international cooperation is the Supra. I have yet to feel and fondle the fully moulded model produced by Volodymyr Gavrylko from the Ukraine, based on a design by Dr. Mark Drela of airfoil research and hlg fame, and sold exclusively by Kennedy Composites in the USA. I did see Tom Kiesling flying an early hand-made vacuum-pressed Supra in Red Deer at the WCs and in Istanbul where he topped the qualifying rounds. In the meantime Tom had won the US team qualifying contest, beating Joe Wurts, and he will be a strong contender in Martin. Others from Ukraine and elsewhere will also be sporting Supras.

Again I have yet to be convinced. Supra looks a gawky beast, an overgrown chuckie, which is what it is and maybe that's the secret of its success. When I see Tom almost stalling at low level over the trees, 500m from home, and then he comes home three minutes later with barely two metres height and 100m to go, and blow me he lands on the spot, then obviously appearance and flying style matter little.

This will be the first WCs to feature Jaro Muller's Espada, available in a smaller 3.2m version and the extended 3.7m wing. Skip Miller has been testing for the past year, but I've yet to see him fly it in anger. I have been flying mine for nearly six months, and do not find it as easy as my Pike. But it is a thoroughbred lightweight stallion, and in the right hands can out-thermal anything I've seen, as well as travelling distances fast from one side of the sky to the other.

Another new model to F3J, but not so plentiful, is the Europhia, designed by Martin Weberschock from Germany. UK's Tony Vale will take three of these, all home built, and that in itself is worth some award. Tony and his friend Nuno Canteiro spent a week in Spring 2005 on a moulding course run by Martin, a fun and highly educational exercise which ended up with a set of moulds and enough skills and confidence to create their own models.

Starting with an out-and-out F3B model, Tony has a 1.7kg version plus two slightly heavier Europhias which out-launch anything I've seen to date. In Martin he will also have two "Tarzan" towers. Only doubt which still lingers is what happens in the last slot of the day when all the air has gone dead.

New model question marks hang over what the Russian team will bring, will they be something different, will the pilots be playing with established designs, or indeed will they turn up? For the last two champs, they did not. But this time they have paid their entry fees, so there is hope.

Finally, will we see Lubos Pazderka's new Aspire with its AH 141-3 and 141-4 airfoils? That would be a treat.

Listing the teams alphabetically, Australia will feature four pilots, David Hobby competing to retain his title after what must seem to him and his supporters disappointing performances since Red Deer. David lives a most hectic life-style, jetting world-wide in his professional role, squeezing in time for house-building and flying his toys. May your Red Deer stars be with you once more!

Aussie manager is Matthew Wood and the team is Carl Strautins again, Mike O'Reilly, primarily famed for F3B exploits and model importing, and Matt Partlet.

They are backed by the usual hefty muscle-bound towers. No bets on this team, but worth a flyoff place. As in football, rugby, tennis and cricket, they are tenacious when representing the nation.

Out of the blue this winter I was visited by Carl on his way back home from Spain, calling into London to pick up some goodies. We had a super few hours, a hasty tasty lunch with Austin Guerrier and my wife, and a quick fly with an untrimmed Espada. He's got a statistically based guide to launching, when to ping off to maximize point scores in all possible conditions. He will show it to you in Martin and next time I listen, I'll stay off the wine.

Belgium is back again and confident, but they have not been travelling much, didn't make Inter glide and Eurotour results bode ill. Gunther Cuypers is TM, leading David Cleays, Tom Mertens and Chris Gyssens, and single junior Bram Druyts. Perhaps they have been saving themselves for the big one.

Brazil is one of my favorite teams, they have zoom zoom zoom and they design by far the best WC shirts! Mario S.de Lucca is lead pilot and manager, Leonardo Greggio and Marion Luz, and Marco Fracao is the sole junior. There has been talk of holding an F3J champs in Brazil, a super prospect. I shall be hoping that the F3J team does better than their renowned footballers and returns home with a prize.

Bulgaria is a new centre of model manufacturing excellence and the man responsible is Nikolay Nikolov, in Martin to manage the team. Pilots have yet to fly at highest levels, but I wish Sotir Lazarkov a luckier time than in Osijek, and Plamen Vasilev and Konstantin Ranov an enjoyable contest with plenty of 1000's.

Canada has Kevin Hanson as TM and helper Ryan Cartmell. Arend Borst who triumphed in Finland will be trying his best to get a second title, joined by pilots Rolf Oetter and Jo Fitz-james. They are also fanatical competitors. Arend dropped me a nice note, and is likely to be flying a Supra and an Icon wing on a Supra fuselage. He was deflated after Red Deer for all sorts of reasons and gave up F3J for awhile. But his lifelong hobby got the better, he's had 30 years of RC soaring, and he's back. That will please all.

Croatia has a full junior and senior team managed by Damir Kosir. Josip Hucaljuk and Arijan Hucaljuk will fly both as juniors and seniors. They breed soaring expertise young in this country. Andrej Potocki Mance is the third junior and the ever competitive Damir Kmoch is the lead senior. He topped the qualifying rounds last year in the European Champs, but he's only flown one Eurotour so far this year.

Another nation whose form is below par so far is the Czech Republic - (soon to be called Czechia). Jaroslav Tupec from the

senior team has won two flyoff places in the Eurotour and is 14th, Jan Kohout is not in the team but lies sixth in Eurotour, Martin Rajsner is currently ninth after two fly-off places and Michal Vagner is way below with only one contest.

Jiri's son Tomas Tuma is a junior again along with Tomas Kadlec and Martin Grmela. To me they are a team capable of challenging the German juniors, although perhaps Croatia will also offer surprises.

Denmark has three seniors, Klaus Christiansen, Ole Blomseth and Poul Moller and sadly no juniors. Klaus and Ole were in Red Deer and must be hoping to do better this time.

Finland, as has become usual, has a single pilot, the ever faithful and enthusiastic Jann Savolainen. He will team with the Brits again, his wife is always a good supporter. Will his sister make it to Slovakia?

France has got flair this year and will certainly do better than WC2004. I'm told they had perfect weather for their Arbois Eurotour, they brought it with them to England for Interglide. Team manager is the cheerful charmer Luc Bocquet and their most experienced flyer is Lionel Fournier, set to fly Xperience and Shadow, perhaps Vision. Bertrand Wilmot, last year's French champion has a Pike Perfect, Vision and Scar for windy conditions. Patrick Elliot was a towman last year in

Osijek and this year pilots a Perfect or Sharon.

The French junior team is Florian Bocquet and Jerome Leprovost, and the five team helpers include Yann Bocquet who will spot for Lionel. The three Bocquets will make merry, I am sure.

Germany has four seniors competing, with Thomas Fischer, the current world junior champ flying with the seniors. After a poor season last year, my crystal ball shows him as a wild card for Martin. The senior team is Philip Kolb, current European champion, Perfect meister, and second so far in 2006 Eurotour. Then Karl Hinsch, owner of F3J's oldest hat, past Eurotour champion from year dot, and still more likely than not to win a flyoff place. And Sebastian Feigl flying with experience beyond his years and Xperiences.

The German juniors are managed again by Reinhard Dexterous Vallant. They could take on most senior national teams and triumph. They are Benedikt Feigl, Dominik Helminger and Oliver Ladach. I try not to forecast junior winners, but which team can beat these three to take the junior team title from Germany?

Senior TM is Peter Feigl, his first time, and his style is just as thorough as his predecessors. More than likely than not, we shall see a "Feigl-fest" again on the podium before leaving Martin. As is normal, Peter

has had them out training several times, the team has been featured in German newspapers and model magazines. Another clue to success is that all reports detail the whole team, towers and helpers, all named and an integral part of the effort needed to be consistently on top of all factors. But I can't bet on favorites, so I shall need to choose another senior team.

Holland will surely haul itself up the success scales this year, led by my friend of long standing Jos Kleuskens. He will speed up his pacemaker if anyone on the team doesn't behave. Lesley Van de Laan is sole junior, and if he flies like last year he will surely reach the flyoffs. Cor de Jong, Karel van Baalen and Frank van Melick form the senior team, all experienced men determined to recover the F3J former glories of Alex Hoekstra et al. Holland is a country steeped in F3J involvement and enthusiasm and surely deserve a winner.

Hungary is a puzzle, never quite living up to its long aeronautical and freeflight traditions. No juniors this time, Andras Szeri doubling up as TM and pilot, and he will be joined by Gyorgy Dobraszky and Endre Voros. I wish them luck and Andres certainly did well at Kiskunfeleg.

If you want to bet on gritty pilots with faith in their ability to win, then look no further than Israel, Roy Dor doubling as pilot and TM, Uri De-Swaan and Eldad Manheim, their most experienced champi-

onship team yet. Last year they made fifth in the team rankings, this year they want at least two in the flyoffs.

The Israeli pilots train on a hard field close to the sea, flat light thermals, strong winds at times and they are hoping for the gusty winds which undid them in Osijek. They will be a Pike team, mainly modified Superiors and they have one Perfect, yet to be fully perfected. The newer Superiors are all cross-tailed, but with lighter built-up tailplanes, saving 20 grams by covering in Icarex and 60 grams overall.

They have promised to bring their own motor oil. Last year Tomas Bartovsky and I stayed in the same apartments as the Israeli team where breakfast was served up with Valvoline, in reality plum brandy, more and more of which was consumed as the contest days went on. The jokes became randier with each day and the flying improved I am told. This year I shall stick with Becherovka, the local pick-you-up and throw-you down! Come to think of it, that's what I need with this writing, ploughing through all my notes and results tables.

Italy has knocked out Germany in the semi-finals of football's World Cup after a match of rare qualities. Can they bring the same flair to F3J? Giuseppe Generali leads as TM with his son shy smiling Marco again flying juniors. Thomas Truffo and Filippo Gallizia make up the full junior

team, the same as at Red Deer where they placed fourth. Only three places to climb and Marco and Filippo are placed 18th and 20th in 2006 Eurotour at this time!

Italian seniors are also well known, Marco Salvigni, Claudio Zavagno and Massimo Verardi, and they've been Eurotouring seriously with Marco in 11th place, and Massimo winning at Forli. They will certainly climb far higher than in Red Deer - serious contenders if they keep their cool.

Japan always bring an exotic element to WCs, their ladies producing origami designs and tasty meals, the men flying half-size hls which fascinate. I shall be sorry not to see Syuhei Okamoto, Red Deer's unluckiest pilot who missed the flyoff with an overflight which wasn't necessary. But we shall see Yoshihiro Ouno who is TM and pilot and Yoshihiro Kurita again and newcomer Hiroyuki Sakai.

Lithuania will be world champion for the first time I believe, and they did well in Croatia. Ricardas Siunbris has managed to get to Holic and Podhorany this year and hopefully will not have his glider shot out of the air this time. He is joined by old hands Gintaras Kuckailis and Valdas Brazunas and junior Adomas Sutkus.

The effervescent irrepressible Jo Grini is the most experienced of the Norway team and came second last month in Podhorany. He will be flying Pike Perfect, but his big-

gest scoop is recruiting Samba's Jane Vostrellova as team helper, sure to quicken the heartbeats along the start-line. Aril Rosvik and Alf Erik Ross are senior pilots with Alf Magne Andreassen as TM. With luck there's a flyoff place here.

Sadly Poland did not make Canada, but Martin will see a full senior and junior team, led by Mieczyslaw Slowik TM and pilot, Aleksander Laskowski and Krzysztof Stasiak, plus junior Wojciech Byrski, Bartlomiej Kiepas and Bartosz Stoltny. There's a nation with aeronautical roots which has yet to transfer to the F3J world, but maybe this year it will.

Romania, venue for so many FAI contests and fast developing, is unusual in having a full junior team, Andrei Nemes, Cristian Nemes and Norbert Scarlat, and only one senior pilot, Cristinel Serban. Dorin Scarlat will be manager and I wish them tons of good air!

If Russia turns up they will have full teams, Dmitry Statkevich, Ildar Sultanov and Alexander Volkov as seniors are led by TM Alexey Schegolev. and the junior team is Dmitry Gashnev, Mihail Lobov and Evgeny Shurygin. If all is well this could be a big treat for everyone at Martin. Have they got the measure of the sort of flying which triumphs at this level?

Slovenia has teams which are still blossoming in talent, and to me seem certain

to climb higher than in Canada and Croatia. Primož Prhavic again doubles as TM and pilot, and he is joined by Primož Rizner, inspiration for Vision, and Nejc Božić. The juniors are newcomers, Jan Hlastec, Jure Marc and Robert Ratajč. I expect to see both teams on the podium, for flying in Martin is not so far different from home.

Slovakian pilots will be at home, in a land which has many flying sites and a long reputation in all forms of glider flying. Will the home base be an advantage, or will hosting duties distract? Jaro Müller as ever leads as TM, with Juraj Adamek, Jan Ivančík and Pavol Vasíček as very senior team and Jan Littva, Daniel Demečko and Martin Gorok as juniors. F3J contests are not really spectator sports, and you cannot rely on home crowds cheering the local teams on. But many at Martin will surely hope for something special this year. I see Juraj giving them that together with one of the juniors.

Biggest treat from South Africa is the expectation that the Goodrums will be bringing their 18(?) month old first born, the best mascot of all. Michelle will not be flying - in the contest - but is TM, leading husband Craig, Mark Stockton and Chris Adrian. Congratulations are also due: even with that long journey, South Africa has three juniors, Conrad Klintworth, Kurt Stockton and Simon Tladi. What treat it

would be to have an F3JWC in their country, and with luck their results this year could provide the motivation.

Sweden returns to the fold with a three person team, Lennart Andersson, Antero and Christina Hurtig. Sorry but I have no track record to report, but enjoy Martin and exceed your expectations!

Switzerland has a core of regular and successful pilots, they travel widely and keenly, they have the same team as at Red Deer in Gusti Bieli, Reto Baumgartner and Konrad Oetiker where they placed fifth. Led by TM Robert Cames they also must be hoping for improvement, but I don't see it for all their dedication. I do hope to be proved wrong.

On to upstarts Team Turkey, the Flying Circus of F3J, the phenomenon of Istanbul Soarists, worthy hosts for the next world championships in 2008. Against all odds they claimed second place in Canada and deserved it. Gentle Giant Serdar Cumbus will again be TM, coach will be Thomas Rossner, returning after a year managing Germany. And again the established team of Murat Esibatir, İlgaç Kalaycıoğlu and "phone-in-the-ear, I'm in a field" Mustafa Koc. They will be joined by junior Ali Ersu. No predictions here: all I know is that every contest and championship is enriched by the zest of the Turks and the comforts of Semin!

It's a Gavrylko team from Ukraine, with father Volodymyr and son Yuriy Gavrylko as senior and junior, and Volodymyr Makarov and Dmytro Kharlamov making up the seniors. My guess is that they will all fly Supras. Whether they can get them to fly as well as Tom from USA is more doubtful. Maybe we shall also see a return of the AVA.

Let no one forget the contribution that Volodymyr has made to F3J flying in most parts of the world with his range of high-tech models over the years. He is still a young man, and much of time recently has been spent at business school. I am not sure yet how wise it is to be so attached to supplying the US market, but we shall see.

Team United Kingdom comes well down the alphabetical order, but in reality it is team Essex and Yorkshire. Tony Guerrier, brother of Austin, will be TM, with Austin Guerrier, last year's TM as pilot this time, Tony Vale and Simon Jackson. Models will be Xperiences, Europhias and Stratos's and hopes are bubblingly high. I cannot possibly comment, but Austin has been on flyoff form each contest this year, Tony has made several flyoffs but missed at Inter-glide where he was running the event with Graham Wicks. Simon is UK's most experienced pilot at championship level, he's a leader again in this year's UK league, but he has yet to crack international form.

They have my support, big hopes and best wishes.

Finally USA, with full teams, back on the Europe circuit, led by a new TM Jim Monaco and with a formidable list of helpers. No new names to report with seniors Skip Miller, Joe Wurts and Tom Kiesling. Junior team is Cody Remington, Joseph Newcomb and Casey Adamczyk (Are the dads coming too?).

I am intrigued to know what Skip, F3B world champion from yesteryear, will fly. He was testing his Espada in Istanbul last time we met, and he found that the best CG position in Colorado had to be moved forward nearly 10 mm to cope with European air. He's also model trading along with his garage workshop business and he could pick from Pikes and others when in Martin. He will be supported by Dusty, his son, junior at the first Upton WCs, and last year placing fourth in the US team trials.

Tom almost certainly will be choosing to fly Supra, and the only intrigue is whether he has updated to the moulded wing or stuck with bagged blue-foam. Can he maintain the form which saw him beat Joe in the trials?

All the upbeat publicity from Kennedy Composites which features Joe Wurts cuddling a green Supra had most of us assuming he was switching from his Icon, which I guess is what was intended. But

my spies tell me that Joe will fly his faithful Icons. Joe himself wonders if that design, now six years old, will manage to stay in contention, but that can only be modesty. He is eager as ever for the grand battle ahead, and he wonders if Philip's Perfect can triumph or if Dave Hobby can work the magic once more.

This year I am more than reluctant to name the winners, but I appreciate from many kind messages that is what many readers are waiting for. Few would plough through all this gossip unless they were betting too.

My senior flyoff "guess list" is ten from the following: Carl Strautins, Arend Borst, Damir Kmoch, Jaroslav Tupec, Lionel Fournier, Sebastian Feigl, Philip Kolb, Cor de Jong, Roy Dor, Massimo Verardi, Jo Grini, Primož Rizner, Nejc Božić, Juraj Adamek, Tony Vale and Joe Wurts. They cannot all make it, maybe none of them will, but I find it hard to chop six from that list. By 4/5 August we shall know.

The winner and 2006 champion: my bet is on Primož Rizner. He is on form, he has all the calm qualities, quiet confidence and skills needed, and he did not win, as I predicted he would, in Croatia 2005. In 2004 I bet that Philip Kolb would be champion in Canada and he made me wait a year for the EuroChamps. So the Primož choice is following precedent.

Junior team prize should go to Germany, but with luck it will all be much closer than in Canada. Senior team will be Slovenia, just pipping Germany and hosts Slovakia. Do not put too much money on it!

Whatever turns up, let us wish for fine weather, tricky conditions for the flyoffs, and the usual friendly spirit of international goodwill every day of the week.

This year's Eurotour contests have been more closely fought than ever. To get into the top ten in the 14 international competitions, and this year so far 329 flyers have flown in at least one, you need to score more than 100%. (For those who don't know, you pick up extra flyoff points if you are placed in the top five).

Philip Kolb, for instance, scored 103 in Istanbul and 102 at Osijek. But that's not enough because Primož Rizner scored 101.90 in Forlì, 102.71 at Osijek and 102 in Kiskunfeleg, and leads so far this year with four more contests to fly. I can see that soon the winner will need a first or second place in three fly-offs as well as winning the preliminary rounds. Before then perhaps, Contest Eurotour will have moved to "best four contests" from the 14 rather than best three.

Nice question is: which is the harder to win, an FAI world or European title, or one of the Eurotour events?

Might sound an obvious question at first, but the fact remains that several of the big Eurotours - Holland, Germany and Czech Republic - each year attract more entries than FAI championships which are restricted to three flyers from each country. It is easier to win a contest with 60 flyers than one with 130.

Not to put too fine a point on it, Germany could field 12 competitors, the Czechs 10, the Slovaks 8, the Slovenians 6, all of whom would be able to fly with a strong chance of winning. In UK, out of the 50 pilots who now compete for team places, only perhaps eight really stand a chance of securing a place. Then you need flawless form to win a championship flyoff place. Yet we all believe it can happen!

Biggest attraction of the world champs is that you get the Americans, Canadians, Brazilians, Aussies, Japanese and South Africans, and with luck the Russians and others. This adds a special spice. Three of the four world champions so far show that the rest of the world often wins, despite Europe's busier contest scene.

There is an enormous variation from country to country in how easy it is to gain a national team place, for seniors and juniors. What is puzzling is that the level of performance does not seem to relate to the difficulty in winning a place. Arend Borst, Joe Wurts and Carl Strautins, either of the Goodrums reliably top the modest num-

ber of national rivals at home, and then turn up on the world stage equally likely to win as those who have had to beat a hundred others.

An aside before passing on: any pilot from any country can enter Contest Eurotour. It is open providing you are FAI licensed and pay your entry fee. Remember Ben Clerx, an US airline pilot, who used to fly regularly and do well. Where are you now Ben?

FAI jury for Martin's champs will be led again by Tomas Bartovsky. Raymond Pavan should be there from Luxemburg, and Germany's CIAM vice-president Gerhard Wobbeking.

Gerd saw his first F3J championship in Osijek last year, marvelled at the thermalling on display, and was amazed that all the models came back. For he is a free flight man, enthusiastic promoter of aeromodelling youth, and designer of easy-to-build high performance models. He infected me again with a wish to chuck up a glider or rubber model and follow it downwind, praying that the dethermalizer works.

So I spent a day at the UK freeflight champs at Barkston Heath in May where Gerd competes each year. The winds were strong, even for Britain, and many models flew outside the airbase even with a 2.5 minute maximum declared for the day.

Competitors cycled and trotted down the runway, time and time again. No way that I could ever do three rounds or more. The average age of the flyers, I swear, was 10 years or more older than the typical F3J crowd. Freeflyters are a truly hardy lot.

The same day at Barkston, I met an old friend Steve Harvey, who sadly suffered a stroke a couple of year ago. He's better and back again flying freeflight vintage power and indoor scale. Why mention Steve Harvey? He was one of the early RC soarers who pioneered F3J, helping with the early rules and the first Eurotour events in the early 1990s, not so long ago. He and his friend were the first to import moulded ready-built soarers into the UK from Czechoslovakia as it then was. Remember the Thermic series by Valenta!

His friend? He was the one and only Neil Webb, another F3J originator, who died from a heart attack only hours after winning the French F3J Eurotour in 1995. The next F3J world champion will take home the huge and delicate Neil Webb trophy as his prize, a real handful to transport around the globe.

Why tell this story? All models which fly, whatever your particular preference at any time, continue to hold an indefinable fascination for aeromodellers, from their earliest years until the end. Let's all be pleased that we are privileged and lucky to share this hobby/sport.

MONTAGUE CROSS COUNTRY



CHALLENGE 2006

DEAN THOMAS (DEAN@STEELHEADPRODUCTS.COM)



This year marked the 9th annual Montague Cross Country Challenge at the Siskiyou County Airport just outside of Yreka, California.

This annual contest is hosted by Dean Gradwell. His hangars are used as the base of contest operations. The airport is used for full-scale sailplane operations and his hangars house a great collection of radio control and full scale sailplanes.

This was my second year in the contest, but it will definitely not be my last.

The contest is fun and never too intense, which allows all participants, teams or spectators to enjoy all that the Shasta Valley has to offer.

Two winches were set up parallel to the taxiway for the airport. A bicycle or golf cart

Photo by Joe Stagg



Author Dean Thomas

was always available to fetch the line back to the start after the plane was launched. The rules allow for unlimited launches, so teams have plenty of chances to catch a terrific valley thermal to start the clock and head out on course.

With 12 teams competing this year, having two winches was a good choice made by the event host. The race course takes the teams around the western part of the Shasta Valley on well kept county roads. The area is all cattle fields and cropland with the occasional ranch house,

allowing many possibilities for an unplanned landing.

For those not too familiar with Cross Country Racing, competitors form teams and set up in a team vehicle, such as a Jeep, truck or convertible that will allow the pilot and spotter an unrestricted view to the sky and sailplane while out on course.

Flying from the back of a moving vehicle down a county road at 50 m.p.h. can be quite challenging, and quite different from normal thermal duration contests.

Other members of the team will consist of a driver, and quite often a tactician. The pilot is usually unable to remove his or her eyes from the sailplane, even for just a moment due to the 3 to 4,000 foot AGL (Yes- Above Ground Level) in which the planes usually fly while out on course. The sailplane has a device called a variometer, attached to a downlink radio, sending altitude and situation reports to a scanner radio mounted on the team vehicle. The variometer sends high and low notes and beeps to the team, to report if the plane is gaining altitude, losing altitude, or holding steady.

Paying attention to the plane is a high priority at these altitudes. This is where the spotter and tactician come into play. The spotter needs to be paying attention to the surrounding areas, as well as the sailplane's location, and looking for clues while out on course. These clues can be another team's plane or a group of birds.

The tactician needs to be paying attention to the distance to the next turnpoint as well as the local landscape. Tacticians log the turnpoints visited and calculate mileage.

The driver needs to drive... SAFELY! There are many points while out on course that the pilot will require the driver to pull over to "tank up" in a thermal. The driver must always keep the team safe and watch for traffic while getting the team to the next turnpoint.

Saturday, June 9th was declared a two hour minimum race.

Teams must fly for a minimum of two hours and a maximum of three hours per attempt. The team with the fastest average m.p.h. over the two to three hour flight wins. The race is scored by miles completed divided by flying time. If teams land before the two hour time requirement, the miles are still divided by two hours, resulting in a penalty. The miles are logged on a scoresheet as the distance between turnpoints, and not the road miles driven by the team vehicle. Every team was also required to fly out to a specific turnpoint before choosing our own route to take on the course.

This year most teams were on course fairly early since the lift was pretty decent during the morning.

My team (Team Tiltman 253) got out on course and started flying rather conservatively with the new RnR



Scott Meader and SB/XC, with slightly lengthened tail boom, on launch. Photo by Dean Thomas



Team Ellias 647 with Dieter Mahlein of Shredair (Driver), Marcela Leal (spotter), and John Ellias (pilot). Photo by Dean Thomas



Team Tiltman 253 on launch. Richard Tiltman pilot, Dean Thomas launcher. Photo by Joe Stagg



Team Meader 195 at the starting gate. Team Rolle 424 in the background. Photo by Dean Thomas



Headin' down the road! Team Gradwell 273 in the red Jeep, Team Tiltman 253 in the white truck. Photo by Joe Staggs

Team Tiltman 273.
Dean Thomas spotter and
Richard Tiltman pilot.
Photo by Joe Stagg



Products MXC. The MXC airframe is still in the finishing stages of production. There was much interest in how it would perform out on course compared to the standard SB/XC also produced by RnR Products.

After we found a good rhythm to the lift and terrain, we started to make some good speed. Several teams were in our direct vicinity which made a good game of leap-frog as one team vehicle passed by the other and added to the enjoyment of flying with other teams.

Unfortunately, the weather began to cool and what was a very sunny Northern California valley turned to clouds and much of the thermal activity was lost. This caused many of the teams, including ours, to land before completing the two hour minimum.

Our plane suffered a small crack after hitting the only rockpile in the field during landing, but was quickly repaired back at the hangars.

Team Rolle 424 completed the day with the winning speed average of 21.65 m.p.h.

A terrific catered BBQ dinner completed Saturday with stories of the day and many laughs while some of the teams tried to describe the conditions they found out on course. A couple of full-scale sailplanes did flybys and entertained us all. Afterwards, teams went to their tents, motor homes, and hotel rooms to rest up for the next day's task.

Sunday, June 10th showed us good weather once again, and the teams were anxious to find out what the task would be. There were hints that it would be something different than in years past.

We were pleased to find that the task was a predetermined course around the valley, with everyone following the same turnpoints. The teams were to fly the 18.25 mile course as fast as possible. The fastest average m.p.h. would win for the day, and multiple attempts were allowed.

Most of the teams started around the same time, so the competition was even more of a race than the day before. It was quite common to be in the same thermal as two other teams, and deciding when to bug out and get some distance logged was very fun. This was much like a sailboat race where one team tacks to gain some distance along the course and get ahead of the group.

The weather was favorable for sailplanes much of the afternoon. The task allowed for multiple flights, and teams could turn in their scoresheet with the best time to the officials. Several teams, including my own, flew multiple flights. We were even able to start a second attempt without having to land. Team Ellias 647 boasted the best speed on the declared course with a speed of 20.55 m.p.h.



After Sunday's event, everyone gathered for the awards ceremony and to see how they had scored for the weekend.

Overall scores were good and Team Ellias 647 flying a SB/XC finished the weekend on top, followed close by Team Brady 575 guiding an SB/XC. Team Gradwell 273, piloting an MXC sailplane, took third place overall.

Many things were learned this year.

Teams really enjoyed the 18.25 mile declared course event of Sunday and the new MXC has great visibility compared to the SB/XC due to a wider average wing chord. Three MXC's were flown during the weekend and the wider chord was declared by many to be better for visibility at altitude. The MXC has a very sleek airframe and promises to bring good things to the Cross Country contests for years to come.

There are still a few XC contests left this summer, so don't miss out. If you like sailplanes, watching these birds fly and compete out on the roads is definitely something you won't want to miss. Check out <http://www.xcsoaring.com/> for a list of upcoming events and more info on these fabulous contests.

See you on the road!

Rich Beardsley's SB/XC with modified wing planform. Rich made the trailing edge straight rather than taper forward.

Photo by Joe Stagg

Day 1: Two Hour Speed Task

Place	Team	MPH	Points
1	424	21.65	1000
2	575	17.66	816
3	647	16.26	751
4	048	15.15	700
5	807	14.11	652
6	555	13.42	620
7	195	13.32	615
8	273	12.62	583
9	221	12.44	575
10	460	12.34	570
11	561	11.85	547
12	253	11.74	542

Day 2: 18.25 Mile Race Course

Place	Team	MPH	Points
1	647	20.55	1000
2	273	17.95	873
3	575	16.34	795
4	195	15.42	750
5	807	15.00	730
6	555	14.41	701
7	253	11.93	581
8	424	10.22	393
9	048	8.52	327
10	221	8.52	327
11	561	7.68	295
12	460	DNC	0

OVERALL

Place	Team	Points
1	647	1751
2	575	1611
3	273	1456
4	424	1393
5	807	1382
6	195	1365
7	555	1321
8	253	1123
9	048	1027
10	221	902
11	561	842
12	460	570

TEAMS

048	Dudley Dufort Peter Dannenfelser Frank Schlosser	424	Jim Rolle Bruce Moore Bob Huff	555	Tom Brightbill Tom Culmsee Dave Johnson	460	Rich Spicer Catherine Spicer
647	John Elias Marcela Leal Dieter Mahlein	575	Matt Brady Kelly Johnson David Portwood	807	Mike Bamberg Alex Kain Bob Nelson	253	Richard Tiltman Dean Thomas
195	Mike Gervais Cindy Gervais Scott Meader	273	Dean Gradwell Roger Hebner Ron Mcelliot Becky Mcelliot	561	Rich Beardsley Susan Beardsley Al Wedworth	221	Paul Gradwell Scott Gradwell

Dave Beardsley's 6m Ventus 2cM

Dave showed up at 60 Acres with this beautiful 'ship' — a 1/3 scale model of the Schempp-Hirth Ventus 2cM motorglider by LET <<http://www.letmodel.cz/>>. That's right, six meters and a weight of 29 lbs.

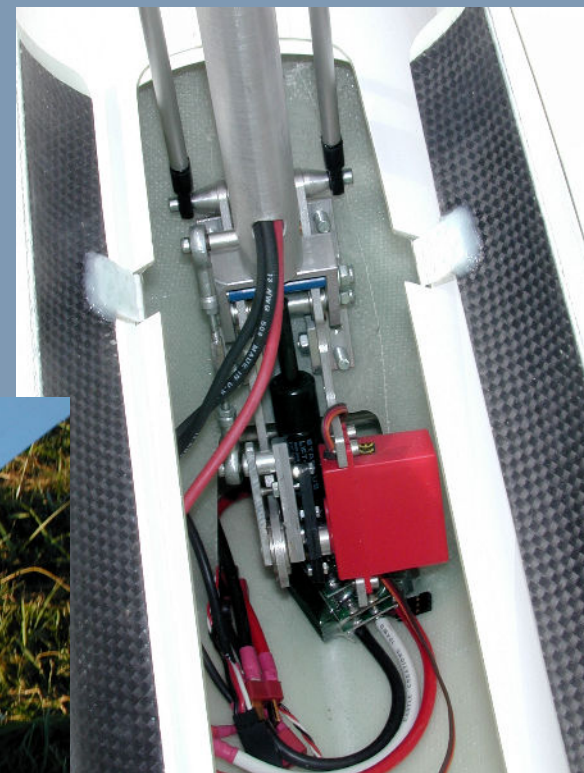
The "Up and Go" system, including prop, is made by JK Modelltechnik. LET Model custom made the fuselage to accept this system.

Two Thunder Power 5s3p 6000 mAh Li-poly battery packs wired in series (41V) power a Lehner Motoren Technik LMT 1940 series motor with 6:1 gear drive through a Castle Creations Phoenix HV 85 speed control. The RF 20x13 carbon prop turns at ~6400 RPM. This system puts out nearly 24 lbs. of thrust, so climbs are brisk, to say the least.





Controls:
Outer Aileron, Inner Aileron/Flap,
Inner Flap, Spoilers, Elevator,
Rudder, Tow release, Retract,
Wheel Brake, Mast, Motor



There are two separate and redundant
battery packs for the receiver (800
mAh each); same for servos (5-cell
3300 mAh each).

The receiver is optically isolated from
the servos and motor speed control.



Full trailing edge control in all
flight modes, camber reflex,
flap, aileron/flap mix, crow,
plus spoilers.

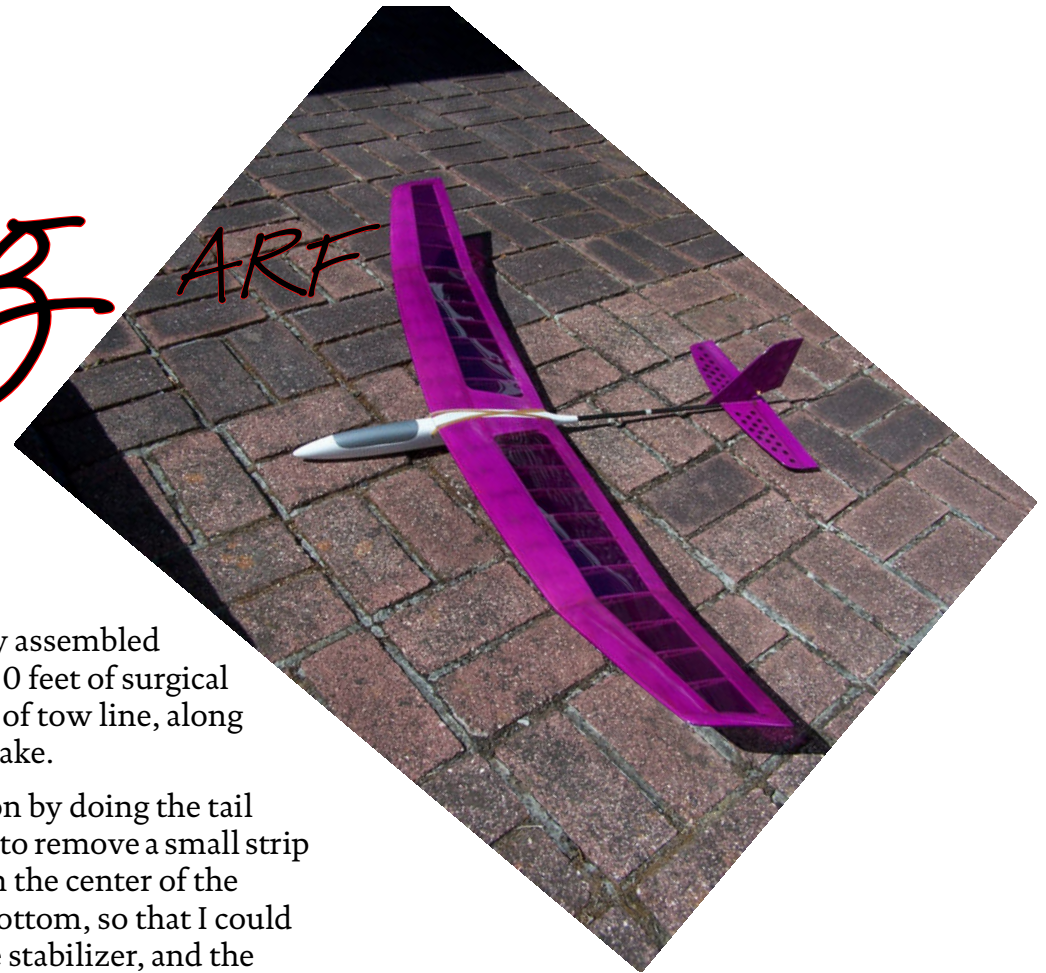


Great Planes

Fling

ARF

by Jerry Slates (oldjer@themacisp.net)



For years I have been flying R/C sailplanes with 2-3 meter wingspans. I always wanted to try a Hand Launch Glider, but never seemed to find the time. Now that I have the time, I find that as a senior citizen, I'm not capable of launching a Hand Launch Glider more than three or four times before my body gives out. But then I discovered the Fling, and its mini-histart. This I can handle.

I ordered a Fling, and when it arrived I couldn't clear my work bench fast enough to get started with the Fling's assembly.

Opening the box there were only a few bits and pieces. Two wing halves, fuselage, stabilizer with hinged elevator, fin with hinged rudder, a manual, and two plastic bags. One bag contained a wing joiner, trailing edge support, two carbon fiber wing dowel's, two control horns, and some rubber bands. The other bag

contained an already assembled mini-histart, with 30 feet of surgical tubing and 200 feet of tow line, along with a hold down stake.

I started construction by doing the tail assembly first. I had to remove a small strip of the covering from the center of the stabilizer, top and bottom, so that I could glue the fin onto the stabilizer, and the stabilizer onto the fuselage.

Next, I joined the two wing halves together and set the wing aside to cure.

Going back to the tail assembly, I then installed the two control horns into the rudder and elevator.

After installing the servos, receiver and battery pack, I tied the pull-pull control strings in place and adjusted and adjusted again. After adjusting the pull-pull

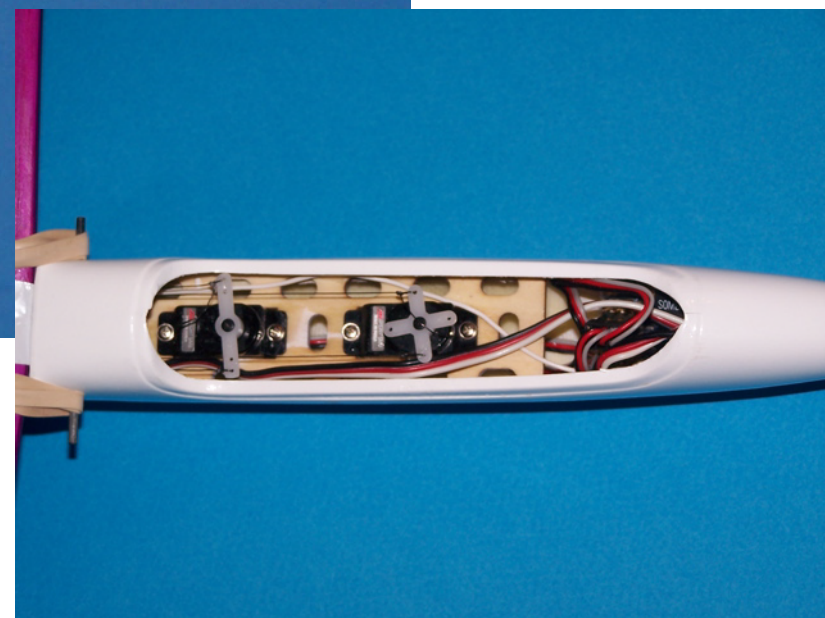
control strings, I installed the carbon fiber wing dowels and I was done.

From the time that I opened the box to the completion of the Fling, only took four hours. This includes some lunch and feeding the cat.

With the servos mounted in place, receiver in front of the servo's and the battery pack mounted under the wing, the Fling balanced almost on the money, just a



Wingspan	48.75 in.
Wing area	285 sq. in.
Wing loading	4 - 4.5 oz. per sq. ft.
Weight	6.5 - 8 oz.
Radio	2 channel, rudder and elevator





On the ground, eagerly awaiting another flight. The Fling ARF assembles quickly, and the package includes the mini-histart shown in this photo — a great deal at \$59.99.

tad nose heavy, but that's what I wanted for the first flight.

At the flying field I did one hand toss. Not bad. Next I put the Fling up on its mini-histart.

Zoom!

Coming off tow at the best part of 200 foot altitude, the Fling went straight. I then did a 90 degree turn to the left so I could see the Fling's attitude. The Fling was a bit nose heavy and some up trim was required.

After landing, I removed the wing and moved the battery pack back a bit and put the wing back on. Launched the Fling again.

Wow!

Coming off tow I drifted off to the right/west side of the field and hit a small thermal. Did three full turns and gained another 100 feet of altitude. "Not too bad," I said to myself. Leaving the first thermal, I flew across the field to the east side and there I flew right into a big thermal. There I did eight full turns and was starting to sky-out. Had to fly out of that thermal before I got into trouble or lost my Fling. 20 minutes later I landed.

Conclusion. What can I say? For just a few dollar's (\$59.99), and a few hours work, you too can have a Fling.

Great Planes
3002 N. Apollo Drive, Suite 1
Champaign, IL 61822

www.hobbico.com

www.towerhobbies.com

Equipment used

Transmitter: JR Quattro 4-channel FM

Receiver: Shadow-3

Servos: JR SM8

Battery pack: 270 mAh

Joe's Wing Geometry Program

by Joseph A. Huwaldt (jhuwaldt@mac.com)

Many airplanes have wing planforms that are based on simple trapezoid geometry. As an aerodynamics engineer and airplane designer, I have spent a lot of time over the years calculating the characteristics of this geometry; area, aspect ratio, taper ratio, sweep angles, span length, chord lengths, etc. To make the task a little less tedious, I've written a Java program that calculates the parameters of a trapezoidal wing planform for me. I've made this program Open Source - under the terms of the GNU General Public License (<http://www.gnu.org/copyleft/gpl.html>) - and have provided the full source code, as well as free executables for many popular operating systems, on my web site.

To use this program: First go to my web site (<http://homepage.mac.com/jhuwaldt/java/index.html>), and follow the "Wing Geometry Calculator" link. There you will find download links for the full source code and executables for the three most popular operating systems (Mac OS X, Unix/Linux, and MS Windows). Select the appropriate file for your needs. Since this is Java, the actual program is exactly the same on all platforms, it is just the way

that you install it that is different.

Mac OS X:

For Mac OS X users, you will be downloading a disk image file. Open this disk image and you will get a window that looks like Figure 1. Read the Read Me file and the license agreement, then drag the Wing Geometry program icon to your Applications folder (or anywhere you like actually). Note that the Mac OS X disk image file includes the full source code in a Zip archive file. You don't have to download it separately. Finally, drag the virtual disk on your desktop to the Eject button on your Dock when you are finished to unmount it. That's it. You're ready to go.

Windows and UNIX/Linux:

For these platforms I have included an installer program that will guide you through reading the Read Me file and installing the program. On Windows this will add a new item to your "Start" menu so you can run the program from there,

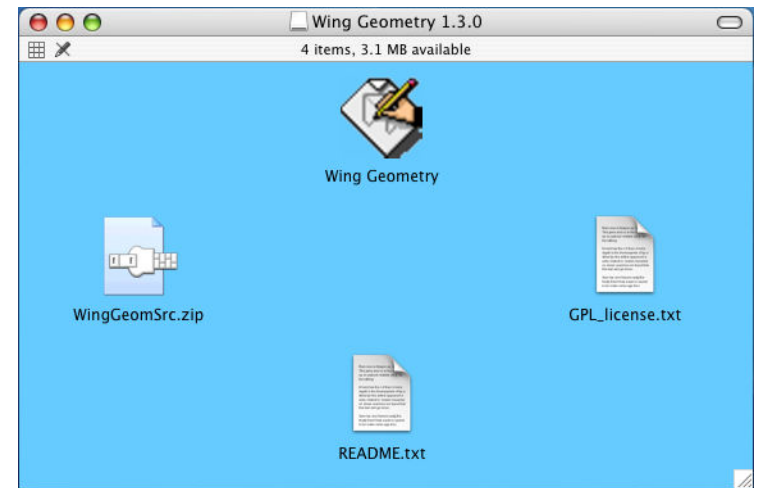


Figure 1. Mac OS X window showing contents of downloaded disk image (WingGeometry.dmg).

and on Unix systems this installer will place a link in the location you specify so that you can run it from that location.

Command Line Users:

Technically, this program doesn't require an installer or fancy icons or anything like that—it can be run directly from the command line (either Unix or DOS). If you have trouble with the installer or want to know how to run the program from a command line, let me know and I can tell you how to do that.

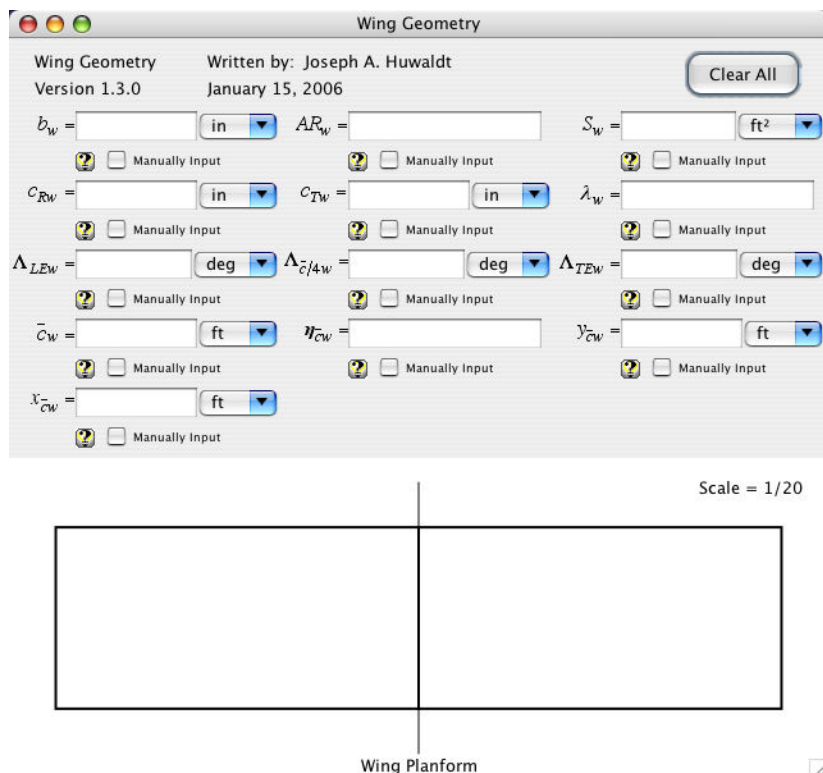


Figure 2. This window appears as the application is running. (Mac OS X version shown.)

Now run the program. **On the Mac**, double-click the application icon; **on Windows**, double-click on the application icon or choose it from the Start menu, or **on Unix**, execute the command to run the program. You should end up with a window that looks like Figure 2 (the Mac OS X version is shown because it's the prettiest).

OK. Now we are ready for the good stuff.

The program window shown in Figure 2 is divided into two regions: the input region at the top and a planform drawing at the bottom (by default, when there is no input, the drawn planform is rectangular). The input region has a series of text entry fields where you can enter numbers. Note that each text entry field or parameter has a label to its left telling you what that parameter is, dimensional parameters have a pop-up menu to the right that you can use to select the units that you want used for that parameter, and below each parameter there is a help button

with a “?” icon and a check box indicating if that parameter has been manually input (or automatically calculated if unchecked).

First some basics. You can enter a number into any parameter by clicking in that parameter's text field and typing in the number. It won't let you type anything but numbers. If you don't want to use the default units when entering a number, change the units with the pop-up menu first, then enter the number. Otherwise, you'll enter the number in inches, realize

that the selected units are feet, change them to inches and get a huge number because the program interpreted your input as being in feet, converted it to inches for you, and you will have to change it again. If you click on the question-mark icon, a help page for that parameter will be opened in your default web browser. In this case, the help pages define the parameter and list out the equations that the program will use to calculate it depending on which other parameters have been input or calculated.

One of the major features of this program is that you can input the wing parameters in almost any order you want. As soon as enough information is entered to calculate any other parameter, that parameter is calculated automatically. For example, in Figure 3, you can see that I have entered a span of 40 inches, a root chord length of 10 inches, a tip chord length of 5 inches and a leading edge sweep of 25 degrees. As the parameters were entered, the “Manually Input” check box is set automatically for each and gradually all the other parameters of the wing planform are calculated for you. The aspect ratio turns out to be 5.33, the projected wing area is 2.08 square ft., the taper ratio is 0.5, the mean geometric chord length is 0.648 ft. (7.78 inches) and the quarter-chord sweep angle is 22 degrees, etc. These parameters could be entered differently and get the same result. Say you wanted a wing with a taper ratio of 0.5, projected area of 2.08 square feet, a span of 40 inches and a

Wing Geometry
Version 1.3.0
Written by: Joseph A. Huwaldt
January 15, 2006

Clear All

$b_w = 40$ in $AR_w = 5.333$ $S_w = 2.083$ ft²

☒ Manually Input ☐ Manually Input ☐ Manually Input

$C_{Rw} = 10$ in $C_{Tw} = 5$ in $\lambda_w = 0.5$

☒ Manually Input ☒ Manually Input ☐ Manually Input

$\Lambda_{LEw} = 25$ deg $\Lambda_{c/4w} = 21.989$ deg $\Lambda_{TEw} = 12.205$ deg

☒ Manually Input ☐ Manually Input ☐ Manually Input

$\bar{C}_w = 0.648$ ft $\eta_{cw} = 0.444$ $y_{cw} = 0.741$ ft

☐ Manually Input ☐ Manually Input ☐ Manually Input

$x_{cw} = 0.345$ ft

☐ Manually Input

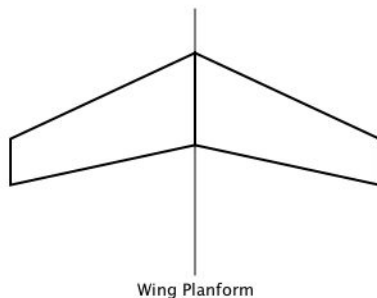


Figure 3. Enter a span of 40", root chord 10", tip chord 5", and a leading edge sweep 25 degrees. Other parameters of the wing planform are calculated automatically.

quarter-chord sweep angle of 22 degrees. I've entered those parameters in Figure 4 and you can see that the results for all the other parameters are essentially the same (within round-off error). So, you need never again try to remember which formula to use to go between tip chord length and span, area, and root chord length today and span combined with area and root and tip chord length tomorrow. The program knows them all.

Sometimes, you have an idea about how the wing should look (e.g.: it should look cool or sexy), but you aren't quite sure what the parameters should be to get it right. This program is especially handy in that case. For example, maybe you require 2 square feet of area and want an aspect ratio of 5, but you aren't sure what kind of taper ratio or sweep you want. Enter the things you require ($S_w = 2$ square feet, $AR_w = 5$) and make a guess at the taper

Wing Geometry
Version 1.3.0
Written by: Joseph A. Huwaldt
January 15, 2006

Clear All

$b_w = 40$ in $AR_w = 5.342$ $S_w = 2.08$ ft²

☒ Manually Input ☐ Manually Input ☒ Manually Input

$C_{Rw} = 9.984$ in $C_{Tw} = 4.992$ in $\lambda_w = 0.5$

☐ Manually Input ☐ Manually Input ☒ Manually Input

$\Lambda_{LEw} = 25.006$ deg $\Lambda_{c/4w} = 22$ deg $\Lambda_{TEw} = 12.234$ deg

☐ Manually Input ☒ Manually Input ☐ Manually Input

$\bar{C}_w = 7.765$ in $\eta_{cw} = 0.444$ $y_{cw} = 0.741$ ft

☐ Manually Input ☐ Manually Input ☐ Manually Input

$x_{cw} = 0.346$ ft

☐ Manually Input

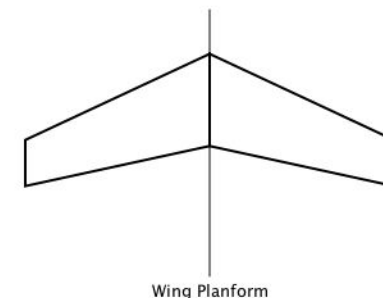


Figure 4. Enter taper ratio 0.5, projected area 2.08 square feet, span 40", and a quarter-chord sweep angle of 22 degrees. The results are essentially the same.

ratio and sweep angle. Then play with them until the wing looks like you want. Besides my desktop calculator, this Wing Geometry program is one of the most used small utilities in my arsenal. I hope it will be as useful to you as it has been to me. If you have any questions about the program, suggestions for improvements and especially bug reports, don't hesitate to contact me. I'd love to hear from you.

SUBJECT: HAND LAUNCH GLIDER CLINIC AND BARBECUE

WHO: Anyone who has ever wanted to fly a glider! Or just wants to BBQ a burger!

WHAT: Hand Launch Glider Clinic and BBQ at the PSSF field

WHERE: PSSF field in Olympia (<http://pssf.home.att.net/>)

WHEN: Saturday June 24th, 2006
Clinic starts at 10 AM
BBQ starts at Noon

HOW: The Seattle HLG fliers are coming down to share their secrets in setting up planes to maximize performance, searching for and flying in thermals, getting the highest launches, competition strategy. Bring your gliders, and all your questions. We may fly a few rounds of different tasks. We will fly a bunch for fun and to work on new skills! Come on down and join us for the BBQ whether you are flying a glider or not.

Notes and photos by Bill Kuhlman



Clinic Coaches: Left - Adam Weston demonstrates flap deflections.
Right - Phil Pearson talks about wing structure and fabrication.



Phil explaining how to set up and perform a discus launch - flat and with the release in the direction of your objective.

This event came together at the last minute, although there had been talk about it since last year. Gary Guinotte had been up to a number of SASS events at 60 Acres and conferred with the Seattle fliers about hosting a clinic in Olympia. He convinced Russ McMillan to join him in driving up to a SASS contest earlier this year, so Russ had the chance to meet Phil Pearson, Adam Weston, and some of the other DLG fliers. Russ was hooked on RC-HLG, and it was agreed to put something together after they had returned from Poway.

Some time had passed, and Gary was out of town when Russ got a query from Red,

two weeks before the weekend they had talked about having the clinic. The group literally started from scratch and put the clinic together over the next two weeks. E-mail announcements went out to Puget Sound Silent Flyers, and Red reached out to the SASS fliers and posted a notice on a few forums, including the Northwest Soaring Society. Nearly twenty participants showed up!

Clinic coaches were Adam Weston and Phil Pearson.

Phil Pearson is the man behind Encore kit production and one half of Maple Leaf Designs. The Encore is a contest-winning

airframe available from Maple Leaf Design. (Don Peters is the other half of Maple Leaf Designs, and he's the one responsible for production of the Icon.)

Adam Weston flies RC-HLG exclusively, and can discus-launch an Encore to a measured 165 feet plus.

The following commentary is based on my notes taken during the day long clinic.

Phil Pearson started out by explaining the evolution of RC-HLG launching. The original launching method was the "javelin throw," similar to that used for free flight HLGs. The designs of the day used a finger hole in the lower part of the



Adam demonstrates the discus launch method. Turning through 360 degrees levels the wings and gives a high speed climbing trajectory. Notice the glove on Adam's launching hand. Despite such protection, blood blisters at the finger tips are not uncommon.

belly, but as fuselages got thinner, launching pegs became common. The side-arm-launch (SAL), started by Harold Locke, utilized the leverage generated by holding the wing tip with direct contact between the hand and the wing surface, and throwing the glider through a 90 degree arc. The now common discus-launch, with a full 360 degree turn, was started by Dick Barker. The wing peg was a German innovation. Phil Pearson came up with the sub-rudder to reduce boom torque on launch.

Using a well-coordinated discus launch, initial speeds of up to 100 m.p.h. are possible.

Phil then went on to explain some of what goes into Encore kit production.

All of this information will be explained in greater detail in future issues of *RCSD*. All Encore flying surfaces are made up using CNC machined parts, and everything is accurate to about 0.0005". While not many homebuilders have their own CNC machines, all of the information Phil gave out was of interest to the participants, many of whom are contemplating building their own RC-HLGs.

The Encore wings are made from foam, either 250 or 400, depending on whether the wing will go on a prototype or a production aircraft. The wings are vacuum bagged using 0.00.014" mylar, with

fiberglass skins (1.3 ounce for prototypes, 1.6 for production and recommending for homebuilding), 1.8 ounce 3/4" wide Kevlar leading edge, and a carbon fiber spar system. The Kevlar leading edge is tacked to the foam using 3M 924 and laid out using a fine line drawn on the top surface of the foam core. After coming out of the bag, the leading edge flashing is cut off using special scissors, and sanded down using 80 grit sandpaper, then 320. Thin CA is then applied to the leading edge to stiffen the fuzz, and this is then sanded down using 320 grit sandpaper. Final polishing of the leading edge is done with plastic polish and a green scrubbing pad, turned with a Dremel tool.



Left: Adam helps Dan Neelands tune his thermal flying. It's often beneficial to turn with rudder only.
Above: James Hohensee practices his launching technique.

The tail surfaces are solid balsa, milled from well-chosen sheet stock. After finishing, epoxy is rubbed in to both seal the grain and strengthen the structure.

When designing control surfaces, it should be kept in mind that aileron flutter at the wing tip is somewhat common during launch. One way of reducing this tendency is to set the aileron end back from the wing tip to keep it out of the vortex.

Control horns are all G10 printed circuit board. These have proven to be quite strong, yet easy to fabricate.

Phil and Adam both use 1/3AA NiMH receiver battery packs of 300 mAh capacity.

The MPI MX-30 servos are no longer available, so most pilots are now using the MX-47.

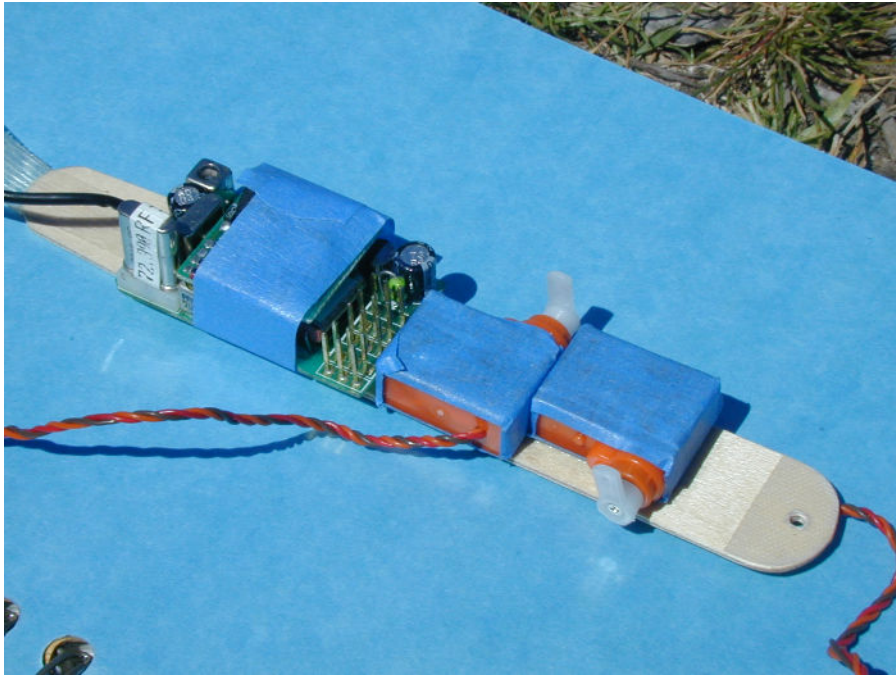
The decalage (angle of the wing relative to the horizontal stabilizer) should be set for one degree. This is to assure some recovery capability following an upset.

At the field, the first thing to do is perform a battery test. Adam has a very small LED unit which plugs into the switch/charging jack. Next, wiggle everything. And before giving that first discus launch, do a hand toss.

Always launch flat and with a full 360 degree rotation. Launching "up" breaks wings as the outside tip hits the ground!

Keep the speed up during landing. This keeps the air moving over the surfaces, providing better control during this critical period.

A lot of questions were asked during the clinic. One which garnered quite a bit of interest inquired about flying with a rearward CG. Phil's response began by explaining the term "rearward CG." Simply, you need to know where the CG is in relation to the aircraft quarter chord point on the MAC, including both the wing and stabilizer area when computing the MAC. You never want the CG to get behind the MAC. Moving the CG rearward makes the aircraft a better indicator of lift and increases its efficiency, but at the expense of increased elevator sensitivity.



Left: Receiver, and elevator and rudder servos on a removable mount.
 Right: The front end of Adam's Encore.
 Below right: The Encore stable of Adam and Phil.

The best way to find the correct CG location is to fly, and fly, and fly some more. Get the glide to be at the maximum L/D.

While you're flying, you should also be learning to identify and "read" lift. A lightweight antenna streamer, tree movements, the flight of birds and insects, and the appearance of dust can all be used as indicators of thermal activity. Once you're in a thermal, you have to stay in it, so knowing how to take advantage of the column of rising air is imperative. Practice never ends.



In a thermal, always turn in the same direction. Changing directions will undoubtedly be detrimental as it means finding the thermal center again.

Use rudder to make flat turns if the thermal is light, as the wing will not have to generate as much lift.

“Use only the lift you need to make your time” (Joe Wurts), and tune your airplane to the weather conditions of the day by adding ballast.

Receiver performance is extremely important in a contest environment. There may be 15 or more transmitters operating at the same time, you’ll be flying close to other aircraft and transmitters, often with multiple signals between you and your plane.

At the start of a contest, the CD should outline the field boundaries and any no-fly zones. Tasks are usually predefined for each round, with heats (a portion of the entered pilots fly together), and rounds (all pilots having flown one round before starting another).

Adam had a portable PA system and a specially made CD all set up, just as he does at the local contests he CDs. He broke clinic participants into two groups and had the first group fly a heat with the second group timing for them. The task was 10 one minute flights (60 seconds maximum) in 10 minutes. This equates to the top ten flights under one minute, as anything over one minute doesn’t count. This means you



Adam and Phil showed how to predict where a thermal will be. Here Adam nonchalantly catches his Encore after flying a good distance downwind to soar in a predicted thermal.

want to fly 57 to 58 seconds for each flight, so you can catch your plane, and turn and launch quickly for maximum flight time.

After the heat was over, the groups switched roles. This sample round was quite an education for everyone. The major point learned was that being a timer for someone else can be a better teacher than flying yourself.

Russ McMillan is already talking about having a similar PSSF RC-HLG Clinic next year, with adequate lead time to post it on the various regional events calendars. If you live in the Pacific Northwest, check out your local club message boards for announcements.

P.S.: The barbecue was excellent!

Have Sailplane - Will Travel

SOARING IN SAUGATUCK

by Tom Nagel (tomnagel@iwaynet.net)



This summer my extended family made its second trip to Saugatuck, Michigan, an artsy little resort town in the southwestern part of the state, at the mouth of the Kalamazoo River. Actually there are two towns there: Saugatuck and Douglas, lying on opposite banks of the Kalamazoo, sort of like Minneapolis and St. Paul, but without Garrison Keillor.

The route from my home in Ohio to Saugatuck takes you along a magical section of the interstate highway system where for fifty miles or so I-69 runs concurrently with I-96. In this mythical stretch of the interstate, the highway signs disappear almost daily, transported to college dorm rooms at Michigan State and the University of Michigan. This makes navigation a little spotty, but by day you can tell that you are on the right route from the fleets of Michigan Department of

Transportation trucks with workers putting up signs. At night, just look for kids in black T-shirts with flashlights and vise-grips.

The route also includes frequent road signs indicating Gd Rapids and Gd River and Gd Haven. I believe these indicate either Good Rapids or possibly Goddam River, but I am not sure. Nobody up there seemed to want to talk about it.

FLYING SITES IN SAUGATUCK

As per usual, I had map scouted the place using Topozone.com. I saw likely slope sites at Mount Bald Top and at Saugatuck Dunes State Park.

<<http://www.topozone.com/map.asp?z=16&n=4723365&e=564844&s=25&size=l&datum=nad83>>

Saugatuck Dunes State Park

Saugatuck Dunes State Park is north of town a mile or so. A state park vehicle permit is available for a few dollars. Wooded dunes; a nice half mile stroll through a thousand acres of rolling, forested dunes takes you out to a pristine lake front beach.

The park has lots of small lake front dunes which look flyable by HLG or other light slopers. The small dunes are spotted with small cottonwood trees, which are actually just one tree that throws out multiple trunks and a network of roots as the dune moves.

The yellow flowers are Hairy Puccoon (*lithospermum canescens*) which bloom in early summer --not to be confused with the Hoary Puccoon (*lithospermum*



The small lake front dunes of Saugatuck Dunes State Park. Hairy Puccoon (*lithospermum canescens*). A bluff fronted, unvegetated dune at the north end of the park's beach.



gordysoarus) which sprouts off all the blooming time.

These larger bluff fronted, unvegetated dune faces are at the north end of the park's beach and face generally West winds. The dune faces are accessible from their back sides via trails through the woods. I actually got to fly for a few minutes here, but with the prevailing southerly winds, it was a struggle.

Oval Beach

Oval Beach is Saugatuck's municipal beach, developed at the turn of the last century, when the horseless carriage was still a novelty. The beach is named after its then-novel oval parking lot. (What was the last time you heard of a place named

after its own parking lot, other than perhaps some LA expressway?)

Since winds were persistently out of the south on both my visits to Saugatuck, I finally broke down and flew the Boomerang off of this 25 foot dune, right behind the porta-potties and on the fence line to the local gay beach.

The gay beach is actually the site of the original settlement in Saugatuck Township, a little burg called Singapore, which was developed by some wealthy Chicago industrialists around 1840. After the Chicago Fire, the industrialists decided to log the surrounding dunes for lumber to rebuild Chicago. All the trees were taken, the dunes were no longer held in place, and in a few short years Singapore was abandoned, buried in the sands.

Tom flew his Boomerang off this 25 foot high dune at Oval Beach.



You can also get to Oval Beach by walking — actually by climbing the 282 steps from a little park on the west shore of the Kalamazoo River up to the top of Mount Bald Top (which is actually wooded) hiking past the towering radome and working your way westward to where the dunes open out over the Oval Beach parking lot. Since we had persistent southerly winds for both trips, I did not personally trek up the 282 wooden steps, but I have it on good authority that it is a survivable trip.

This picture of the west face of Mount Bald Top includes a message from some



282 steps to the top of Mount Bald Top.
“HELLO,” “HELP,” or “HELL.”
A long 40 foot high slope at Pier Cove.
Inside Wally’s Bar and Grill.
Americana Realm - DQ and gun shop.

intrepid hikers. It is not clear from the photo whether the message was a friendly “HELLO” or a call for “HELP” from someone in cardiac distress or possibly some sloper who had slogged to the top and found unfavorable winds and felt constrained to comment “HELL.” In any event, it is a clear sign of intelligent, if not totally happy, life on Mount Baldy.

The Mount Bald Top dune faces look best for West or Northwest winds.

Pier Cove Park

Pier Cove is a small lakefront community five minutes and two exits south of Saugatuck/Douglas on I-196. The township owns a small piece of lake front,





A Michigan Sail-Possum

and the adjacent resort seems to have cleared a nice stretch of bluff, and even installed some classy steel and concrete steps, the blue structures in these photos. This 40 foot slope would be nicely flyable on a west wind. Which I didn't have.

Other flying related sites:

- Wally's Bar and Grill

Wally's is an informal bar and grill, with a comfortable outdoor patio. Wally's is visited by a varied crowd, including a group of folks who ride half sized Harley's and this ultralite autogyro pilot who hangs out above the outside bar.

Other important cultural sites:

- Saugatuck Brewing Company

This micro-brewery features brewery tours and on-site beer tasting. 'Nuff said.

- Americana Realm

Americana Realm is the only combination Dairy Queen/Gun Store that I have ever personally encountered. The family was headed back to our cabins at Goshorn Lake after a long mid-day hike at the Saugatuck Dunes park, and we wanted to stop for a snack. The off-brand DQ looked like a reasonable place for a wet and sandy gang of nine to stop.

The gun store portion of the premises came as a surprise. To be fair, the place also sold beach toys and souvenirs, but the merchandise ran heavily to nunchucks, throwing stars, paint ball guns and heavier artillery.

Sadly, we found on our second visit to Saugatuck that the gun store side of the business had folded and the premises were for sale. We just don't properly value our cultural treasures in this country.

- The Michigan Sail-Possum

This critter is closely related to the Ohio Sail-Cat, and is found along side many major highways. I'd suggest a discus launch, with rubber gloves.

Saugatuck is a lovely little town, very hospitable, with good food and a fine location. I recommend it as a place to visit if you are in the area. But just between us RC guys, next year I am lobbying for a return to Sleeping Bear Dunes.

JR Aerotow 2006 RCSD July 2006 Photo Identifications

Page 4: Dan Troxel and his five meter span LET Reicher.

Page 8: A 1/3 scale Libelle from a Krause kit by Kevin Kavaney

Page 9, upper left: Jim Frickey's Pegasus 2, powered by a 3W-120 on KS cans and built from the Derstine kit. Its 64 oz. fuel tank provides about an hour and a half of towing.

Page 10, right photo: A 120" span Ka6 from a SkyKing RC kit by Jim Porter. This model sports a three piece wing in place of the standard two piece.

Page 11: An Orlik II from PP-RC Modellbau, Poland. 177" span, 19.5 lbs. Assembled and owned by Jim Porter.

Page 15, right: Jim Frickey's all-molded Ventus 2ax is from HF Models and has a span of five meters. There's a separate 2000 mAh battery pack running the retract.

Page 16, upper right corner: Lee Estingoy's 5.3 meter span (28%) SZD Zefir 4.



It has become a tradition that after the IHLGF a number of contestants take a trip to Parker Mountain for a bit of front side sloping and back side dynamic soaring. I come from the east coast with a limited number of slope sites and where the lift is sporadic. Being at Parker where the lift is so consistent and so BIG is quite a treat. By sunset on Tuesday, the lift was dying and Charles Frey, Peter Jensen, Al Nephew and myself were stretching out our final moments on the mountain. First Peter flew Al's Encore and attempted a few low speed DS circuits on the back side, then Charles flew it on the front side to create this photo opportunity.

— Don Vetter