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About RCSD

R/C Soaring Digest (RCSD) is a reader-written monthly publication for the R/C sailplane enthusiast and has been published since January, 1984. It is dedicated to sharing technical and educational information. All material contributed must be exclusive and original and not infringe upon the copyrights of others. It is the policy of RCSD to provide accurate information. Please let us know of any error that significantly affects the meaning of a story. Because we encourage new ideas, the content of all articles are the opinion of the author and may not necessarily reflect those of RCSD. We encourage anyone who wishes to obtain additional information to contact the author.

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In the Air!

Possibilities and commitment

Publication of *RC Soaring Digest* moved to the internet a few months ago, so we thought we'd share some statistics and allow a sneak peek at some of our future plans for the magazine.

First, some download statistics...

The *RCSO* PDF files remain on the server and are downloaded for several months following their initial posting, so the total number of downloads for a specific issue is continually growing. For example, the May 2004 issue, the first issue for which we have complete statistics, has been downloaded more than 2,250 times since publication. In general, an issue is downloaded at least 500 times within a few days following announcement of availability, and over 1,000 times during the first 30-45 days. This is tremendously gratifying for the *RCSO* Team, and we sincerely thank all of you for your continued support.

And the latest poll...

A recent *RCSOaringDigest* group poll on the Yahoo! web site garnered 36 votes from around 145 members. We asked, "What is your preferred maximum PDF size for *RCSO* monthly issues?" and received the following response:

500 K	0	0.00%
1.0 MB	1	2.78%
1.5 MB	0	0.00%
2.0 MB	2	5.56%
3.0 MB	4	11.11%
5.0 MB	3	8.33%
10.0 MB	1	2.78%
over 10.0 MB is OK	25	69.4%

What this means...

Tremendous credit must be given to Judy Slates for making the decision to move from print to digital format. The move has proven to be a great success by a number of measures: production time is dramatically reduced, color images can be easily incorporated, and readership has grown almost exponentially.

You'll not be seeing huge PDFs on a regular basis, but the survey does indicate a substantial majority of *RCSO* readers are willing to download larger files when content warrants. This issue is well under 4.0 MB in size, despite numerous photographs and a large page count, and serves as an indication of what can be presented with a bit more latitude on maximum file size.

We received an exceptionally good idea for a new page layout scheme from an *RC Soaring Digest* reader just a couple of weeks ago, and have already begun creating the necessary templates. Gregory Vasgerdsian is hard at work fine tuning the look and feel of the new format, and everything should be up and running for the November issue. We are extremely excited about the possibilities which the new page layout will open and know *RCSO* readers will appreciate the change.

Anyone can submit material for publication in *RCSO*. Material can be sent via e-mail attachment, on CD-R (ISO-9660 format) or 3.5" floppy disk. Images should always be sent as individual files separate from article text, and higher resolutions are preferred. If in doubt, please inquire.

The *RCSO* commitment...

RC Soaring Digest will remain "the journal for R/C soaring enthusiasts" and will continue to serve the R/C soaring community as a source of ideas, news, and technical and educational information from all corners of the world.

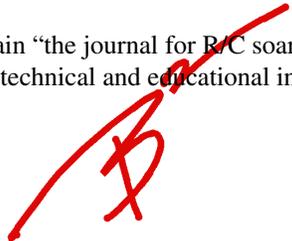


On the cover

Joe Chovan's Leading Edge Gliders P-40 Warhawk turns and burns over Palmer's Farm during the Midwest Slope Challenge in Lucas Kansas.

This model is an EPP-foam glider, one of four seen flying in the "Warhawks over Wilson" project. Photo by Dave Garwood.

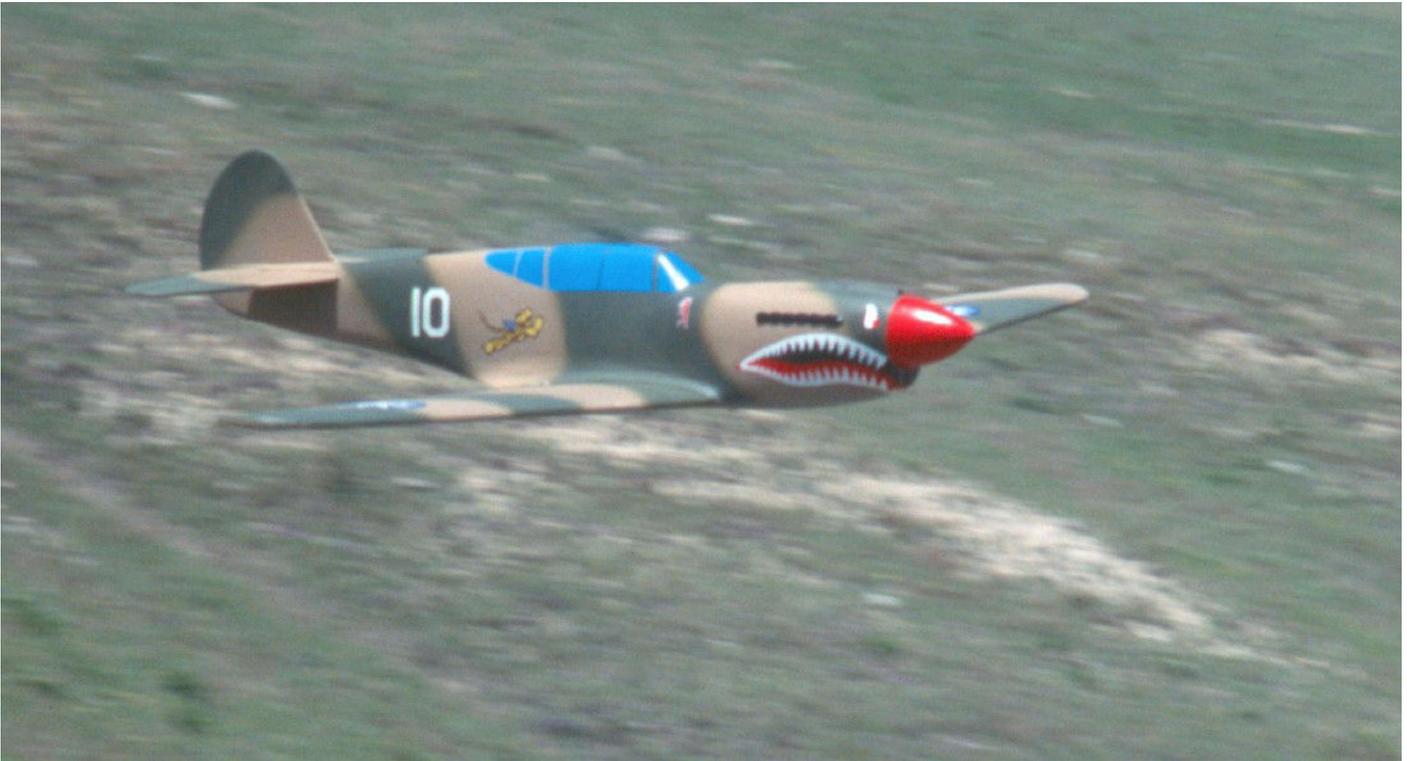
A photo essay featuring a number of Dave's images from the event is included in this issue starting on page 4.



<<http://www.b2streamlines.com>>
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Midwest Slope Challenge 2004

A photo essay by Dave Garwood



Joe Chovan's P-40 Warhawk makes another pass along the slope.

Another great chapter in the longest running slope racing series in North America, the eleventh annual Midwest Slope Challenge, was held May 13-16, 2004 at Wilson Lake in Lucas, Kansas. The MWSC is a memorable gathering, this attracting 60 pilots from 13 states and one from Germany.

While an easy-going competition is the focus of MWSC, the weekend is also a reunion and a spring vacation – a chance to see flying buddies and a relaxed getaway from the rat race at home. With six known good hills facing six wind directions, you'll get to fly most days at Wilson Lake, as it's windy in Kansas. Some participants bring five or more sailplanes, ranging from hand-launchers

to 3-meter full-house ships, and get to fly them all on one day or another.

The competition is tons of fun, with 40 or more pilots flying foamie combat, about 30 flying in the ODR race, 20 in the unlimited race, and 30 or so in the foamie warbird race. If you're a serious slope racer, you'll be flying against some strong competition, but newcomers fit right in just as well as the old hands.

Events like this don't just happen, they are the result of plenty of behind-the-scenes planning and preparation. We are indebted to Loren Blinde and the LASS stalwarts for organizing the event, Alden and Joyce Shipp for base camp support, Jim Baker and many volunteers for running the far turn, Tom and Kelly

Neill for T-shirts, Tom Wild for building and maintaining the race timing and signaling equipment. Special thanks go to Kent Palmer and Jim Lawson, cattle farmers who let us fly in their private property, and to the US Army Corps of Engineers for accommodating us at flying sites on public land.

For more photos of the event, see: www.slopeflyer.com. For detailed information on MWSC 2004, and on next years event when it is announced, see the LASS (Lincoln Area Soaring Society, in Nebraska) website at <<http://home.alltel.net/mwsc>>. Check with the LASS dudes to see what's cooking for their less well-known Columbus Day weekend slope fun fly.



Upper: Mark Blinde, winner in foam combat event (wing division).

Middle: Foam combat event (wing division).

Lower: Near turn in the ODR race.





Upper: Randy Mohr and Greg Smith launch during foamie warbird race.

Middle: Greg Smith and Pat McCleave launch during the foamie warbird race.



Lower: David Day, winner in foam combat event (airplane division).



Upper: Foam combat event (airplane division).

Middle: Near turn in the foam warbird race.

Lower: Relaxed flying in late afternoon with DAW 1-26s. Pilots L-R are: Wayne Rigby, Joe Chovan, Rich Loud, Alden Shipp.



Upper: Two of the “Warbirds over Wilson” sailplanes over the dam.

Middle: Foam combat event (airplane division).

Lower: “Warbirds over Wilson” sailplanes, built by Joe Chovan, Rich Loud, Jack Cooper and Dave Garwood.



Have Sailplane, Will Travel

by Tom Nagel
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Soaring over Hibernia

Al Nephew, Guest Columnist



Thinking about vacationing in Ireland, or even moving there? Like to take gliders along when you travel? Well, there are fine opportunities for soaring in Ireland, both thermal and slope, and you can enjoy them.

Spring semester, 2004, found me on the west coast of Ireland. The university I teach for asked me to accompany, along with another professor, nineteen students on a program there from late January to the end of April. While in Ireland I investigated the soaring possibilities and tried some of them. In this article I won't restrict myself to the flying offerings, but will tell you a little about travel, accommodations, and food and drink as well.

Getting to Ireland is part of the fun. Plenty of airlines and good prices. When you get there the first thing you get is greeted, for no one is friendlier than the Irish. They mean it, too. Turns out they have a happiness/friendliness gene. Next you might go to a pub. There is one pub in Ireland for every 400 residents. Families visit pubs, and many pubs serve food. When we arrived with our gaggle of students one of the pubs instituted an expansion project, probably in our honor.

Since March 29, 2004, smoking has been banned in all workplaces in Ireland. This includes pubs. Now pubs are enlarging to outdoor areas for smokers, but meanwhile they congregate on the sidewalk (footpath). There is a new term for flirting outside the pub while smoking: "smirting."

You might want to rent a car. Stick with the known outfits, the Hertz and Avis

crowd. These have good rates and won't pack on extra charges. If you rent a car you will have to acclimate yourself to Irish roads and driving. Think left. Always think left, except when approaching a road on foot or driving a car. Then Look Right First!

Let's say you land in Dublin first, and want to get into the Dublin area soaring scene.

Slope soaring is popular in the Dublin area. There are some very good hills for it southwest of the city. A road (the N114) runs along the west and southwest edge of a long ridge above the Bournabreen Reservoir. There are no trees on the slope or on this part of the ridge, and a southwest wind, the prevailing wind here and in most of Ireland, has a nice approach to this slope. The slope isn't especially steep, but in a good wind the lift it provides is just great.

Every Sunday with a favorable wind finds a bunch of guys sloping Bournabreen. Most of them go through the town of Tallaght (pr: "talat" rhymes with palate) to get there. One can either use N 114, which comes down into Tallaght from the hill just south of the town and follow it to where the slope is obvious, or N 115, which leaves Tallaght at the southwest corner, proceeds south a quarter of a mile or so, then you take the first left after leaving Tallaght at a cemetery at Piperstown and head up the hill toward the southeast. You will wind around some little hills and through some gullies and you will know you are on the right road when you see a sign about 50 yards to the right of the road on a small hill which announces:

DOGS WORRYING SHEEP WILL BE SHOT

You might have a desire to stop and contemplate the circumstances in which a sheep would be worried about a dog and its problems, but I advise you to keep to the original plan and forge ahead up the hill until N 115 merges with N 114 at a Y, and soon thereafter you will find yourself at the sloping spot, or one of them. There are turnouts along the road here that invite you to park your car, get your planes out and chuck them into the wind. Remember to wiggle your sticks first to be sure everything works. The reservoir is a long way down there, but given the right conditions your out-of-control plane might get to it. It has happened before, I'm told.

If you find the wind too low for sloping, you might want to try some thermal flying; I hope you brought along a thermal plane or two. You might well find the Bournabreen slope suitable for thermaling the day you are there. You can soar out over the valley and search for lift. No need to worry about trees or canyons to lose your plane in, since from your launching spot you will have a panoramic view of hundreds of square miles, most of the land you see covered with heather and grass and hardly a sign of human habitation.

If you wish you can continue on N 114 south until it intersects the road to Enniskerry. Head that way and you will find your way to Sugarloaf, a tall mountain that dominates the skyline in that area. On the south side of Sugarloaf at the base of the steeper part is a flying field used by the local clubs such as the Shankill Radio Control Fliers. When



Looking west from the top of Croagh Patrick, Clare Island in the distance on the right, Inishturk on the left. Louisburgh shows up as white buildings in the left-center of the photo. Askillon Hill, where sits John Dennis' house, in the farthest hill visible before the ocean. Photo Al Nephew

you get on the southwest side of Sugarloaf after having wound around it toward the southwest and the south on the one road that goes that way, you will find a road headed east. Take it and soon you will come to places that look like models are flown there, and you probably will see planes flying around. Turn right on the only road available there and soon you will see a sign warning you about artillery fire:

**WARNING
AREA SUBJECT TO
ARTILLERY FIRE —
IRISH ARMY
PRACTICE FIRING RANGE**

Never mind. They rarely use it, I'm told, and I could see no shell craters in the grass runway the model airplane fliers use, nor anywhere else around there.

If you would like more on-the-spot information about flying sites, when people plan to fly next, etc., go to the website <<http://www.maci.ie>>. MACI stands for the Model Airplane Council of Ireland, an organization that combines all the clubs in Ireland. The site is updated regularly, lists clubs flying schedules, etc. Go to the contact pages on the site.

A Dublin area resident I met at the Sugarloaf flying field, David Nolan, likes to fly sailplanes. He is very willing to be contacted at <drnolan@gofree.indigo.ie>. David flies with Aer Lingus to Los Angeles and other destinations in the U.S. on a regular basis.

Where will you stay in Ireland? At B & Bs, of course. The country is full of Bed and Breakfasts in people's houses.

Families will have an extra room and will rent it to you, and will include a fine Irish breakfast in the reasonable charge. Prices now at B & Bs run (in Euros—one euro equals about a dollar and a quarter, but this changes constantly so check the web) from the mid-20s in the country to 50 or so per person per night in Dublin. Hotels can be cheaper for groups of two or more, depending on which hotel and where you are. You will enjoy your B&B stays because of the friendly, helpful people who will be your hosts.

In Dublin there are several hostels. One I know is not hostile is called Globetrotters, breakfast included in the cost. It's cheap (about ten euros a night) but good. It is easy to get to, being very near the main bus terminal which is the last stop of the Airlink bus from the airport (5 euros). Part of Globetrotters is

a hotel that has typical hotel rooms and prices, also including a fine breakfast. My College, the College of St. Scholastica, uses Globetrotters and has been pleased for years with their accommodations. <http://www.iol.ie/globetrotters/accomm.htm>

There are little hotels in Dublin, right downtown, with attractive prices and atmospheres. Check <http://www.hotels.com>, for instance.

Out West, near or in Louisburgh, for instance, there are lots of B & Bs and Holiday Cottages. The College uses Louisburgh Holiday Cottages <http://louisburgh.mayo-ireland.ie/LouisHC1.htm>. Cost in the high season is about 350 euros a week, less in low season, pretty good if you have a bunch of people (up to seven or more per cottage) and can cook for yourselves. Handy location, too.

Out in The West, there are lots of hills, but few of them have roads to the top. This is where what I am about to tell you will come in handy. I know someone who knows the hills with roads to the top, hills with slopes facing the wind the day you are there, and he is willing to show you the way. This man is John Dennis Gartrell, who lives on one of those hills. There is good sloping to be had near his house. He knows the owners of the land on the hill his house is on and has their permission to fly there and bring fliers there, whatever the wind direction. If you go looking for sites on your own, you can freely fly from roadside sites if there are no fences, but crossing fences requires permission, as does using gates (which have to be closed behind you). John Dennis says, "Some folks are very territorial, but most would be amenable and helpful if you ask."

John Dennis's e-mail is gartrell@bluewin.ch. E-mail him well in advance to be sure he is going to be home, but even then there are other guys he knows who can help you. Tony Conway, for instance, who has a model shop just south of Westport, is a fount of information.

Most of these guys have been power fliers, wet power at that, and at the whims of the Irish weather. Too much

wind, a regular feature of that region, thanks to the North Atlantic, grounds them, but by now they are finding out that when they are grounded, John Dennis and Tony are flying combat with their foamy flying wings. So the Irish sloping contingent grows daily.

What about me? I'm back in Duluth or I'd welcome you. Sorry. Next time. But e-mail me at alnephew@aol.com for advice and any help I can give. I'll have more specifics about where to stay and whom to contact.

C'mon, you say, doesn't it rain in Ireland? Yes, occasionally. Well, sometimes often, but not usually hard and not for very long. The same jackets we are wearing in the photos because of the wind also keep out the rain when it happens to fall. It almost never freezes in Ireland, and hardly ever snows, and when it does snow it is usually only at the higher altitudes, so you can choose a lower hill. You can fly any time of the year, though in the summer you get the

most daylight—at latitudes in the mid 50s it never gets really dark in June and July.

You can take your 72 mhz equipment with you and use it in Ireland with little worry. Everyone there said there won't be any interference and you won't cause any. I didn't have a problem, and never had to check if anyone was on my channel, since they are all on 35 mhz.

Put it on your to-do list to take a flying trip to Ireland. Everyone knows what a great place to visit Ireland has been, and now it is even greater because it is a sloper's almost-heaven: a little cool, a little wet sometimes, but warm in the pubs and there's Guinness on tap. Don't miss out. Go before the arctic ice melts away and the fresh water from it dilutes the salt concentration in the North Atlantic and that stops the Gulf Stream. Then the Chill will fall on Europe. Go now while it is still warm enough for flying all year in Ireland.



John Dennis Gartrell flying his scratch-built own-design sloper, having just brought it by over his shoulder. His buddy Alex reclines in the heather enjoying the scene, and in the background you can see Clew Bay and the Nephin Range of mountains. Westport, County Mayo, would be visible to the right except for the hill blocking the view of it. It's April and another sunny, breezy day in the West of Ireland. John Dennis's plane has a thin, flat-bottomed airfoil he designed, and the fuselage is sturdily made of ply and balsa. The strip ailerons don't have separate servos, so without flaperons he often has to tailspin down from the speck heights the plane reaches. Photo by Al Nephew



Al Nephew launches his Zagi south from the top of 2510 foot Croagh (pr: "crow") Patrick. The stone structure at the left corner is the toilet block for the comfort of the thousands of pilgrims who ascend this mountain every July to express their reverence for St. Patrick, the patron saint of Ireland, who spent 40 days and 40 nights up here in the year 450 to get an insight into truth. In the distance are the Sheffrey Hills, and at the foot of the mountain is a planted forest. To the left turf (peat) is being harvested from a bog. Photo: Elisabeth Pederson



Al Nephew brings his Zagi past in a fly-by while knee-deep in heather. This is heather flying at its best. Photo John Dennis Gartrell



Al Nephew launches his Zagi north toward Clew Bay. In the background we can see Clare Island on the right, and past it the North Atlantic. Ireland provides great cloudscapes just about every day. Photo: Elisabeth Pederson

John Dennis has brought the Zagi over his right shoulder and it is ready to catch. The sheep in the background haven't shown much interest except for the one facing the camera, which kept a steady eye on our goings-on. It might have been worried. Photo: Al Nephew.



John Dennis heads his sloper toward Clew Bay. Good-sized waves demonstrate the effect of the strong north wind on this fine sloping day. Photo: Al Nephew



Looking south on Bridge Street from The Square in Louisburgh. Some cars seem to be parked on the wrong side of the street, including two on the right, but that is not unusual in Ireland, where one parks where one can find a space, often on the footpath (sidewalk) to leave space for cars to get by. The closest car in the photo is parked on the correct side of the street, for this is Ireland, where one drives on the left (see that car coming toward you?). Photo Al Nephew





Fine flying field for hand launch especially. This one is in Blackrock, a southern suburb of Dublin, near Newtown Park Avenue. Another fine thermal flying day. Photo AI Nephew

Croagh Patrick seen from the west by us and some sheep that are marked with spray paint to indicate ownership. Not infrequently the Reek, as it is called locally, has clouds hiding its peak, or even half of the mountain. It helps to choose a mostly clear day to climb it to be sure of a fine view and good flying conditions. It will be windier and cooler at the top than at the bottom. Take water and food with you. You can refresh yourself at the end of your flying day at Campbell's Pub at the Foot of the Reek. Photo AI Nephew



A Zagi and a scratch-built sloper with its Profi Tx, all nestled in the heather. The Zagi is two-piece using carbon fiber tubes-in-tubes and filament tape to hold it together. Works great. Travels great.

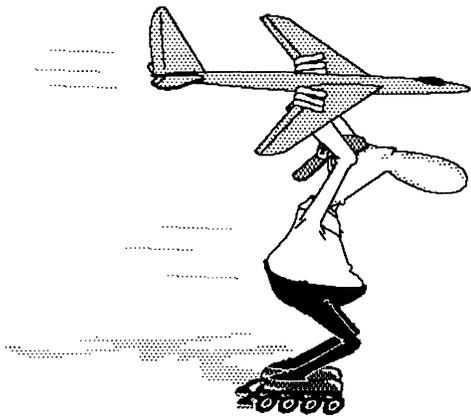


Al's granddaughter Elisabeth Pederson holds a Taboo and JR Tx on Louisburgh's Gaelic Football pitch, Louisburgh, County Mayo, in the background. Another fine thermal flying day in the West of Ireland. Photo Al Nephew



Al launches his Zagi from the top of Croagh Patrick, Clew Bay below. Photo Elisabeth Pederson





Gordy's Travels

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Samba "Pike Superior"

The current hot thermal duration moldie

I am either lucky or have good advisors because my time involved with Thermal Duration Contest sailplanes has been blessed with some really great sailplanes.

I never really flew RES type balsa sailplanes, having entered soaring from high performance glow, gasoline, and electric powered RC, so I jumped right into soaring via a full house Monarch Handlaunch... and I was terrible at it. But I think that it worked out best because like so many of us who came from power we thought soaring was going to be "easy." What I found out was that while I could throw pretty well and could control model aircraft really well, soaring was something that was completely alien.

Next I moved into three meter vacuum bagged composite TD ships such as the Grand Esteem, Pelican, Psykos, then into my first Euro-moldie, the 130" Stork. While I did a lot of soaring and was very involved in the hobby, I really wasn't taking "task" soaring very seriously.

That changed with my first Fred Sage Addiction and subsequently his Compulsion series of competition sailplanes. Sure I was more experienced, but my improvement was more greatly due to the performance of the aircraft. They allowed me to make better use of my skills... easier.

They also helped breed improved molded sailplanes being developed in Europe for task soaring. I have often said that what makes a great competition sailplane is performance and DURABILITY. Since contest sailplanes

are pushed to near beyond their design envelope nearly every flight, then pounded into the ground, then packed and traveled, they need to be durable in order for us to be able to fly them frequently, and in order to get to "know" them.

The recent F3J (hand tow launched) World Championships were held in Red Deer, Alberta Canada, and it was pretty clear from the sheer count of Pike Superiors on the ground and finally in the winner's circle that Pikes have proven their value! Easily more than half of the sailplanes were Pike Superiors, both V-tail version and X-tail (full flying standard stabilizers).

But I knew the value of the Pike Superior from well before attending Red Deer! When the Compulsion series availability was near ending, I knew it would make sense for me to switch sailplanes. I needed to learn a sailplane that I would be able to replace if needed... and this is where luck stepped in! Michael Volz (Volz Servos) had a Pike created for use promoting his servos, and asked me if I would want it. To tell the truth, my understanding of Euro moldies was that they were too heavy and usually V tails... I wasn't all that excited about the idea... especially considering their cost.

But he sent me a photo and WOW, it really got my attention. I got the plane and even ordered a second one as a back up. Now this part wasn't on a guess, I had found an excellent website hosted by JoJo Grini of Norway, virtually dedicated to the Pike series <<http://www.grini.no>>.

However I made a huge mistake – JoJo warned that special precautions had to be taken to expose the RX antenna for proper range, and of course I thought to myself, "those poor Euros' goofy radio problems"... and didn't pay attention. Which cost me those two beautiful sailplanes. Both went in from a loss of radio in the first two weeks.

So I quickly got two more rushed over and moved the antenna away from the fuselage (See my past article "Home In on the Range!") and proceeded to learn about flying and setting up my new Pikes.

What I found was that I didn't like them! Not at all... 'course I was paranoid after losing those first two, and I still had my #1 Compulsion winning contests with me. I continued to "practice" fly the Pike, but never really felt it was something I would enjoy flying contests with.

I went to Cincinnati for one of the best contests in the country called the Great Cincinnati Pumpkin Fly, a man-on-man event held at the Voice of America broadcasting park. I had put both the Pike and the Compulsion together, trying to decide if I would ever fly the Pike in contests. When the CD announced that switching sailplanes would be allowed between rounds, it was like serendipity! I'd get to try both planes against each other in the same event!

I have to tell you — I decided on the Pike for the first flight and have never looked back since. That was nearly one year ago, approximately 30 events, 27 pieces of wood, and hundreds of flights



since... all with the Pike Superior. It was like it was "waiting" for me to give it a real chance to show me its strengths.

So how does it fly? A LOT like the Compulsions, but slower, and faster, with bigger launches and it's easier to see! It has no funny shocking quirks. If you stall it in a turn, it just drops its nose. If you stall it in level flight, it just drops its nose.

Its rudder is very unique in that it's TALL — almost to a fault for traveling (I use a Sportube Double Snowboard <<http://www.sportube.com/pages/snowboards.htm>> to transport my sailplanes and airport inspectors aren't

very careful about protecting protruding parts).

There is plenty of rudder area and it yaws the sailplane with good authority, absolutely critical if you hope to maintain energy with an X-tail.

The fuselage is made of a "burlap" weave of carbon and Kevlar composites. EXTREMELY strong and light, but also extremely good at "shading" your transmitter's signal, and that's why the need to get the antenna out of and away from the fuselage.

Unlike 90% of the current Euro moldies, the Pike Superior uses a slip in canopy, instead of a slip on nose cone.

At first I wasn't too happy about this, but now have found that in fact, its far easier to access the radios components, and it is far stronger than a nose cone set up, plus it gives the nose some style points... as well as making installing a nose skeg a far easier prospect.,

I use Volz <<http://www.volz-servos.com>> Micro-Maxx-X servos exclusively.

The Pike Superior comes with a servo tray already cut and installed which the Volz drop right into (as do other micro brand servos). A drawing of the installation is sent a long and other than warnings about the RX antenna installation, this is the only assembly "instructions." The drawing shows that a four hole servo arm is needed for the elevator function... it doesn't say why though... and often guys who get the Pike don't follow this recommendation. But the reason is important.

The bellcrank buried into the vertical stabilizer has a long arm which allows the horizontal stabilizers to sit higher up. However, that makes the normal use of a two hole servo arm short on travel, and it becomes very apparent the first time you try use your landing flaps. It's



Gordy's Sportube "train" at the airport



not possible to get enough down elevator compensation with that short arm. Guys try though. They increase their transmitter travel adjust function to its maximum, and when they find that doesn't do it, they increase "crow" function to assist in driving the sailplane down at the landing... not a good idea. In the end they check that little drawing and put in a longer arm. The shortcoming of using a longer arm is reduced reaction time of the stabilizers. Using a faster servo really helps. Volz makes a High Speed Digital normally for use in RC helicopters for their tail rotor gyro function which works really well... pretty sure most of the servo manufacturers make something similar. Not critical to winning task soaring — for sure!

The Pike Superior is also pretty. Swept swallow tail tips on the rudder, stabs and wing tips really add to its grace. It is possible to choose your fuselage, stab and wing top and bottom colors. My Pike's are decorated with huge blue vinyl lettering that says "Powered By Volz" and "GordySoar" in Red letters. I didn't do that because of "sponsorship" but because Michael Volz is one of my best friends, and it looks pretty cool in a NASCAR kind of way.

The wing lay-up is also optional and varies the overall weight by a few ounces. I chose to go with a full carbon wing (in case I wanted to dynamic soar

it), but a carbon D-tube/Kevlar lay-up or a super light mostly Kevlar lay-up is available. Those of you who have gotten serious about contest soaring realize that ounces of added strength far out weigh the value of ounces of weight reduced.

The stabilizers are very light weight, yet strong and stiff. They use an approximately 1/4" carbon tube as their main joiner and pivot and a steel wire as the actuating joiner. Also very uniquely, they chose to increase the stiffness of the bellcrank and its durability, but by adding material to it, instead of wasting that material and weight in a bushing to hold the bellcrank from dropping into the fuselage. This sounds kind of weird, because when you pull out the joiner, the next time you have to fish and wiggle to get the joiner back through the bellcrank for use. And it was weird for all Pike X-tail owners, till I got my Pikes...

It was more than weird, it was annoying, so I looked through my junk hardware box and found a plastic car door panel keeper. It looks like a plastic screw but with soft threads. Now instead of pulling out the joiner to pack up the stabs, I "push" in the keeper, driving out the joiner and catching the bellcrank. When I install the stabs, I use the joiner to "push" out the keeper. Shortly after I figured this idea out, I went to a hardware place, bought a couple of boxes of those keepers and sent them to

Samba Models, where Pikes are born and are grown. At first they didn't quite get it, but it didn't take long for them to get a big smile on... and now Pikes are supplied with that fastener so no one has to bother with fishing for the bellcrank.

The Pike Superior comes with an adjustable tow hook and JoJo's website showed a "CG" location well forward of where Americans fly their sailplanes at, which has been typical from what I have found. I think because of the popularity of "fixed horizontal stabilizers" (V-tails), they were unable to easily correct incidence alignments in flight to changes in balance point, so nose lead was used to dampen the hunting effect of positive incidence set ups (up stabilizer). When I got my Pike Superior, I set it up to the "recommended" spot, gave it the "Gordy's Balancing System" wimpy left-hand-toss test and it nosed into the ground about 10 feet in front of me.

I figured I would give the "CG" setting the benefit of the doubt and put some up elevator trim in... then gave it a hard toss. As I suspected it nosed up hard with the added airspeed and up-trim, telling me the nose was way full of lead.

After pulling almost all the nose lead and sorting out the toss test (it now floated across about 1/3rd of the field on the wimpy toss), I put it on the winch and checked it inverted. Still more lead

than was needed for “trustworthy” communication, so more lead out.

My balance point was flying at 4 1/2" back from the leading edge of the wing saddle, but after launching a few times on mono at the F3J worlds, I have pulled more lead and now have it set closer to 4 3/4". That makes it ridiculous for me to fly... that is the “now” me. I have figured out that it is insane to hobble our high performance sailplanes to “fit” our style and comfort, but rather it’s our responsibility to become the “pilot,” to develop the skills to take advantage of our super sailplane’s design. Will you crash on launch with a “balanced” sailplane? No! What possible sense would it make to have a TD ship that was impossible to fly smoothly and confidently? Does it tuck in a dive? You bet... who cares? We don’t dive during TD task flying. Is it “touchy”? You bet... it now can HONESTLY indicate lift and sink... , versus lying to you with gains or drops in airspeed. (Check out next month’s column, “CG, the Term that Keeps Us from Excelling!”)

Since the balance point is now almost exactly above the rear of the tow hook slot, you’ll want to set the tow hook all the way back ... ultimately. Till you are comfortable with launching a 130" sailplane, put it in the middle. (Go back and read my article on launching, just a few issues back!).

Samba’s workmanship is flawless... you get what you pay for, completely. The nose has a strong pre-cut servo tray installed. The pushrods are installed and the hardware is supplied. The wing saddle has a molded spot for the D-9 connector to be screwed in place, and the wing has a molded spot for the mating connector. The wing uses three hex head mounting bolts to keep the fuse from cracking in the wing saddle and it doesn’t crack. The wing’s surfaces are linked at the top of each surface, threaded link horns are supplied and the surfaces have brass inserts installed to receive the horns. You have to create the links. Do not use 2/56 threaded rod! It makes the links easy to make, but the rod is too soft and will bend and flex... always. Use Sullivan 2/56 clevises and solder them to music wire cut to length. I use a 1/16" drill to drill out some of the

thread thickness and grind some of the ends of the music wire to get them to fit on each other and to aid soldering the two together... although I believe that thick CA would work just fine to hold the two together... and make getting the lengths just right. Never use a bunch of TX sub trim to “fix” wrong length links!)

I use Volz Micro-Maxx-X servos throughout my Pike, so I first glue in the mounts with the arms aligned with the surface horns. Its best to lay a piece of grocery-bag thin plastic in the mount, mount the servo with all screws tight, then Goop the bottom of the bag and everything with some 5min epoxy and lots of filler (splooge). Then to gently (too hard and you can deform the skin!) press the whole assembly against the top skin. This allows the splooge to “pot” around the body of the mount and the servo to really create a perfect bed that doesn’t rely on tight screws to keep the servo from shifting in its mount.

Then I use the TX and RX to center both the flap and aileron servo arms. Now it’s a simple matter of getting the right length before securing the clevis to the link-rod at the servo arm.

Note: It’s very important to use the first hole of the servo arm! This will give you all the down flap you’ll need for landings, reduce the shock and vibration loads to the gear trains and give you all the servo torque you paid for! Also make sure the servos are mounted with the servo arm closest to the trailing

edge. The shorter this length the less “slop” you will have at the flap edge. Don’t expect or care about what seems like an extreme amount of “play” while the flaps are resting at neutral... top mounted linkages just don’t offer the long lever arm of nice long bottom surface horns. This was one of the things I checked at the F3J Worlds. There were a lot of Pikes from lots of countries with all brands of servos in use, and every single one was just as loose as mine. It just doesn’t matter much... but by keeping servo arms and linkages short it helps.

The flap servo arms should be straight up when the flap is at neutral. I found that when using the first hole on the arm, the clevis would bind against the center of the arm, so I used a Dremel grinding drum to relieve some of the clevis on that side (same for the aileron clevis’). That way I can get some aileron action out of the flaps, too.

You will have to use a Dremel to open up the slot at the surface horns in order to get the clevis to open enough to get the pin in... that’s normal, and planned that way by Samba. Just open up the radius on the side of the horn hole where the pin side of the clevis opens to allow enough room to fit the clevis over the horn.

For battery, I use a 4 cell 1350mah 3/4Sub-C pack. I was using NiMHs but found that they don’t work well for my haphazard charging lifestyle. There just ain’t anything like having big fat



A Volz Micro-Maxx-X mounted in the Pike Superior wing.



JoJo Grini "demonstrates" the carbon rod skeg.

Ni-Cads for reliable, hit 'em hard and fast charge reliability... and I prefer battery instead of lead!

Switch harness is a touchy subject... we pull a lot of amps from our competition sailplanes and my personal tests have found that an intermittent power connection loss is the real reason for most "unexplained" crashes... not radio interference. My experience has found that inexpensive brand switch harnesses aren't really working (okay you are flying along and the Picolario is alternately reporting 4.3v, 5.1v, 4.6v... every few minutes on a fat peaked flight pack, till you pull the switch out of the circuit and then she stops reporting... because she is seeing full voltage. JR switches are pricey but have a lot of metal inside and so far have always kept the power flowing.

I ground away the back of the servo tray almost completely to the rear servo because I like to put my RX behind the servos. That keeps the wing servo wiring hidden, as well as the fuse servos. I use good self-stick Velcro to keep the stick of four Ni-Cads fully up in the nose and I have about an ounce of self stick pieces of lead stuck up on top of the front battery for balance. I have also glued in a skeg rod tube of 1/4" brass tubing in the nose. It is on an angle

so that a piece of carbon rod 2" long (exposed) does not pass the vertical plane of the fuselage nose tip. I keep the carbon rod in the tube during use by wiping a small layer of thin CA on the rod to get it to a snug fit (wouldn't do to have it come out on a stuck but bounce-back landing!). I carry pre-cut extras along, because it is possible to break that rod off on a real hot landing. Mostly I use only about 1 1/4" length because you will get a pretty severe spring back action on landings with longer pieces... but it does give you the ability to react to DEEP, slippery grass conditions like Visalia.

You can find an excellent and similar system depicted on the Norwegian F3J web site <<http://www.f3x.no>>, just look for the skeg tip.

The Pike Superior has always gone straight up bungee and winch launches, using a wimpy left hand girlie-man toss. So I have to say, "NO WORRIES" when it comes to first or any Pike launches... no bad habits that I have ever noticed. Make sure that you have rudder mix ON during launches with any sailplane. It is rudder that will keep you on a straight track during launch.

Which brings me to Rudder... X-tails LOVE starting turns with rudder. Rudder mix to aileron gives you aileron

FIRST. (Read my past articles on why rudder is sooo important to flying X-tails well).

Weights and specifications are on the website, but in general the Pike Superior has an HQ airfoil with some camber, and weighs in at about 76ozs for the full carbon version, and the span is 130". You can get more details here: <<http://www.f3j.com/superior.htm>>.

Jane is the cute sister, and she does all of the e-mail answering. Her English is very good but don't expect to have long detailed correspondence... they are busy building Pikes for the rest of us, so don't be bothering them!

Your best source of information is from JoJo Grini at <<http://www.grini.no>>. He keeps a literal diary of his flying and his Pike experiences. He has a set up a page with extremely detailed information on throws and mixes, too. However, in the end, if you were given the finest tuned, most expensive violin, could you play a concert worth paying for?... not without practice and experience.

If you focus your attention on measurements and alignments, you'll be very busy... not flying. You'll "have" something, but you won't be learning anything. Remember, a sailplane set up all wrong but flown often is far more effective at a contest than one set up precisely but flown once a month...or less. All that setup and measurements stuff IS important... to the guys who know what to do with it... and important to you IF you have been finishing in the top ten guys at all the contests (and have been a student of "Gordy's Travels").

I know... I travel, and have been there and done that!

Got Pike?

See you on the next trip!

Gordy

The Natural Side of Thermal Soaring

by Lee Murray

Cloud Streets

In the June issue, I provided an example of a soaring forecast using US Weather Bureau data for a local airport that can be downloaded from the Internet and using Soarcast¹. Since the last article I have had another example of weather just right for soaring. That came during a visit from Gordy Stahl. Gordy came into town and contacted his "old flying buddies" hoping we could get together and fly at the sod farm. He called me at work, so we went out for a coffee / ice tea and got caught up from years of not seeing each other. We left with a plan to fly the next morning at 9:00 AM.

It was a good morning and surprisingly, several of us were getting our 10 minute times right away. Gordy explained that

1. Soarcast v1.1.0 is a 32 bit windows based system for plotting and analyzing ROAB atmospheric sounding information downloaded from Internet weather sites. The program was obtained from the Soaring Society of America web site.

the way to get good at contests was to fly 10 minute rounds every time you launch. Although he said that we shouldn't get used to using variometers to thermal, we think that he really does use his Picolario altimeter/variometer quite a bit. He used it effectively when the model got high and down wind by such a distance he could not see what was happening as well as he could hear what was going on through the Picolario reports.

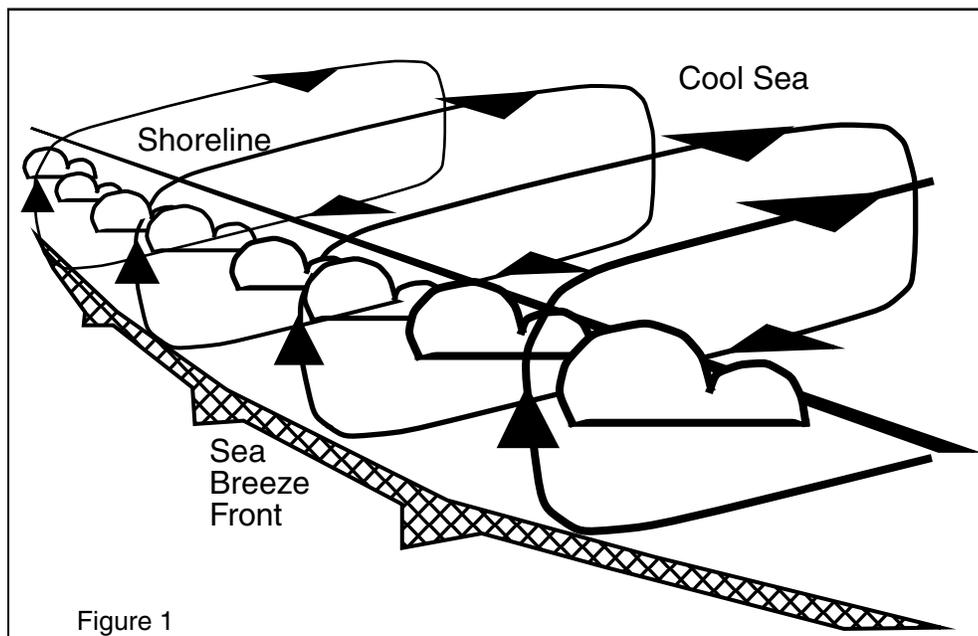
It wasn't long before Bob Johnson pointed out a pattern in the sky. A cloud street formed right above the field and we were enjoying our good fortune of it being overhead. The large photo on page 23 shows Gordy with his Pike Superior "specked out." Gordy's Picolario altimeter was giving us updates for altitude and his count down timer was keeping him informed about how he was doing in his 10 minute rounds.

About those cloud streets... There are several kinds of cloud streets, some are related to air mass convergence near geographical features such as shore lines or where weather systems frequently meet, like near Dallas-Fort Worth.

A cloud street that is common around large bodies of water is one related to the off-shore breeze. A cloud line develops from convergence of the predominant breeze and the sea breeze. An example would be a cool sea breeze like off Lake Michigan in Wisconsin that is meeting up with a westerly wind to cause the air to rise. When the breeze has enough moisture to cause a cloud line, it can be a great tool for those who fly near to the lake or shore to launch when the cloud street is moving inland during the day². See Figure 1, redrawn from Roland Stahl's presentation at the 1987 MARCS National Soaring Symposium

I believe that the cloud streets we were dealing with during Gordy's visit were probably caused by the rolling of air within the mixed boundary layer under a more stable upper level condition (a temperature inversion). The mixed boundary exists between the ground and a height where horizontal air flow

2. Stahl, Roland, MARCS National Sailplane Symposium, 1987, pg C22, Al Scidmore editor.



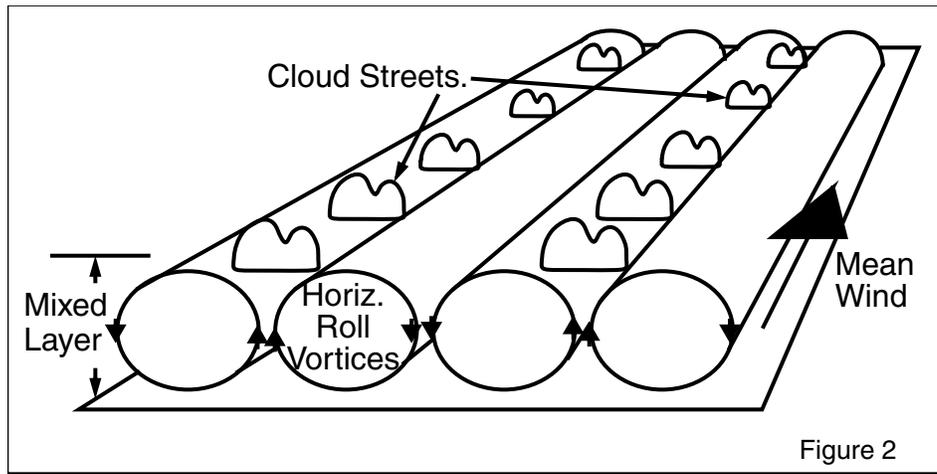


Figure 2

predominates. What mixes this boundary layer is usually convective cooling. The example, Figure 2, is also redrawn from Roland Stahl's presentation at the 1987 MARCS National Soaring Symposium.

The cloud street orientation is in the wind direction. The wind is moving like cylinders rotating in opposite directions with rising air under the cloud street and sinking air between the cloud streets. The spacing between the streets is 2.5 to 3.2x the cloud base height¹. The rolls as shown in Figure 2 (the horizontal rotating cylinders of air) cause a cloud street where the converging air rises to form clouds.

Cloud streets can come from other sources as well. One is a pulsing thermal

generator which could be a hot spot such as a rock quarry or a thermal lift off point such as a hill or tree line. The spacing of the clouds is related to the heating rate. Sometimes these would be called cloud streams rather than streets².

Cloud streets also form over ridges of mountains when the air rising over the mountain hits the dew point. Parallel rows of lenticular clouds can form downwind of the mountain ridge from the waves formed by leeward waves from the mountains³, as shown in Figure 3. These cloud streets are formed at such altitudes that they are of little interest to us ground-based sailplane pilots. Small waves without clouds may be caused by smaller features and be useful to RC modelers.

You might ask, "How can I use this information?" Being able to recognize a cloud street should be the first step. Classifying the kind of street is the second step. If it is a pulsing thermal, then you must determine if the clouds are building or decaying. If building, go for them. The building clouds will be closest to the source and the decaying clouds the thinning ones most down wind. If the street is a stable situation such as Gordy found his Pike in, then go for it, and avoid the area midway between the streets which is a near guarantee of sinking air.

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1. Stull, Roland B., *Metrology for Model Sailplane Flyers*, M.A.R.C.S. National Sailplane Symposium — 1992 Proceedings, pg K30.

2. Pagen, Dennis, *Understanding the Sky*, Published by Author, pg 223.
3. Welch, Ann, *Pilot's Weather, A Flying Manual*, pg 177 Fredrick Fell Publishers, Inc, NY, NY.

Gordy Skies Out
Gordy Stahl flying, Fran LeClercq operating the retriever (the arrow points to Gordy's Pike)

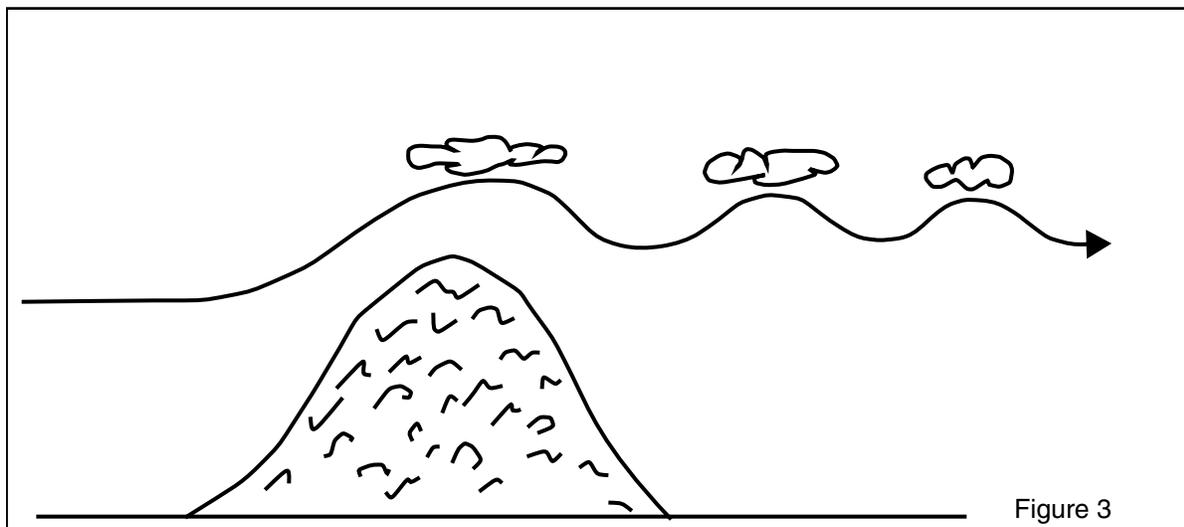


Figure 3



on the Wing



Alula kit review

Michael Richter, as most *RC Soaring Digest* readers know, produces the Weasel and miniWeasel foam wings for slope and thermal flying. Following our review of those two aircraft within the pages of *RCSD*, he has been kept extremely busy producing kits for customers here in the U.S. and around the world. Our two Weasels went together fairly rapidly and have proven to be great flyers for us. As subscribers to the flyWeasel Yahoo! group, we were extremely excited to hear of Michael's plans for a small lightweight side arm launch (SAL) glider, particularly as it was to be tailless and sport swept forward wings.

The kit

Our Alula kit arrived in the mail and was immediately opened. The box arrived with absolutely no damage to any of the enclosed parts.

The completed aircraft has a span of 34 inches and an overall length of 20 inches, but the kit arrived in a standard 20" x 9" x 2" box. The accompanying photo does not do Michael's packing skills justice. The EPP foam wings were cradled in their beds, and the fuselage was inside its original blocking. The two supplied Depron™ fins were placed on the floor of the container with the wings resting on their top, and the longer carbon rods were in a box side corner. The fuselage block, along with a complimentary roll of covering tape, was used as a spacer, and a bag of small parts was left free to bounce around within the confines of some wadded packing paper.

The nine page instruction sheet was quite intimidating at first glance, but after some perusal, it became obvious the instructions are just very well detailed and not at all complicated. Three pages are filled with drawings and explanatory illustrations; another page provides some design notes and lists the kit contents and required additional items (radio gear, tools, glues, etc.); the five remaining pages are devoted to actual aircraft construction.

The assembly instructions are broken down into 16 major phases, and each of those phases is in turn divided into separate small steps which take a few seconds or a few minutes to complete. If you have just 15 minutes per day to devote to building, you can easily complete Alula over a period of a couple weeks or so. Actual total construction time is only a few hours.

The entire Alula construction manual, complete with color photos of the individual steps, is available on the Richter R/C Aircraft Design web site at http://dream-flight.com/instruction_files/Alula/main.html, so this review will not go into the construction process in detail.

A few procedures which might be tricky to perform are already accomplished when you open the box — the wing leading edges are finished, the tips are cut to the correct outline, and the channels for the spar rods are precut; the elevons are beveled; the tunnel in the fuselage which carries the antenna and servo wiring is perfectly formed; and the battery and receiver compartments are fully cut out.

Construction notes

Wide tip Stabilo "Swing" felt pens were used for the color scheme with the carbon rod spars serving as the baseline for coloring the upper wing surface. We used red forward of the spar with orange and yellow rays fanning out from there. A fine black marker was used to put a bordering line between colors, and it matches the visible carbon rod quite nicely. The bottom of the wing was

colored entirely black for visibility when flying overhead.

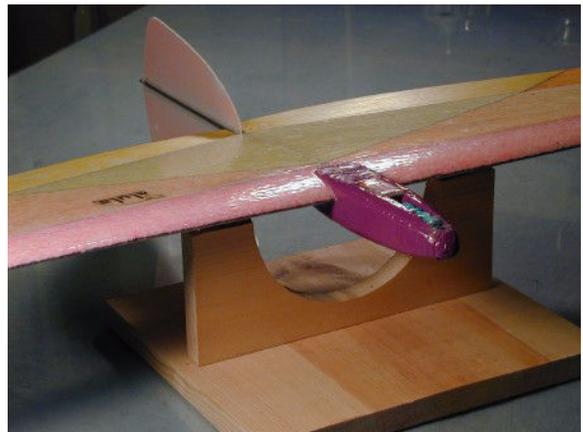
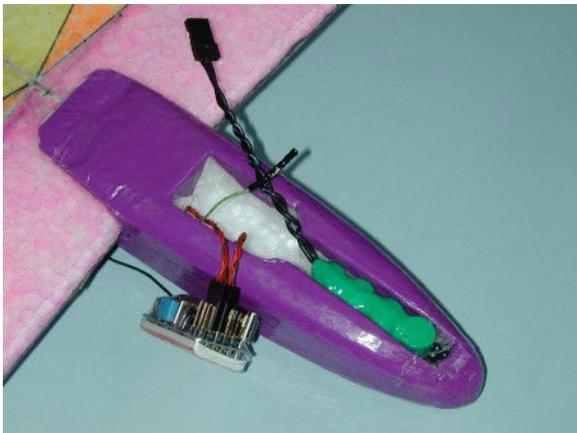
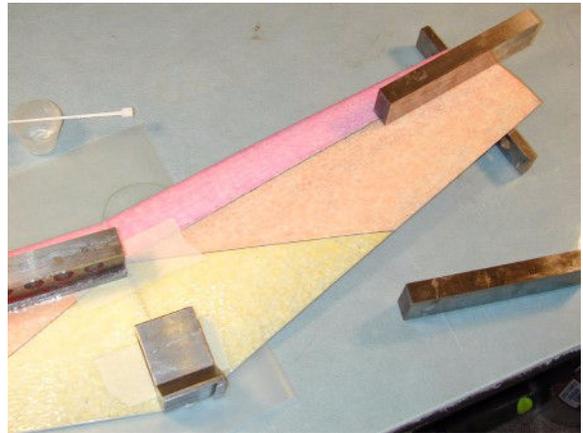
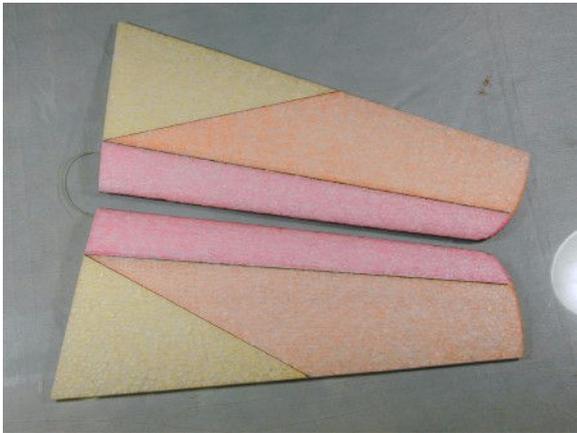
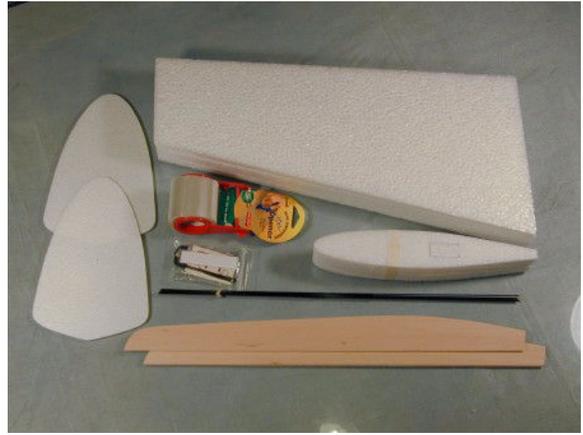
We ran the antenna through the wing as explained in the instructions, but did not want to be limited to having our FMA Direct M5 receiver in this single aircraft. An old set of JR connectors was cut apart to make a single pin plug-in with heat shrink tubing added to both leads for strain relief. In the future we can use this receiver in another glider with built-in antenna and matching plug.

There was only one problem during construction — taping the wing. Our first attempt was a disaster, through no fault of the instructions, and we finally resorted to using a heat gun to remove all of the tape. Alyssa volunteered another set of hands for the recovering, and with a second very light spraying of 3M-77 we managed a very good covering job without running out of tape. (We're thinking practice counts.)

We set up a holding jig for the wing to make the joining process more reliable. Masking tape was used to hold the top surfaces together, and a mixture of five minute epoxy and microballoons was then applied sparingly along the roots of both wings. The wings were then folded downward and the assembly was placed in the fixture overnight. This forms a good bond, and this root joint is plenty strong after the addition of the two carbon fiber wing joiners.

Rather than taping the elevons, we elected to use a single coat of clear dope over the colored balsa. Attaching the control horns is a simple task, and the elevons are attached to the wing with long pieces of regular household tape. We use Scotch Crystal Clear Extra Strength. Attaching the carbon rods to the fin and shaping and covering the fuselage pod are then the only major construction items to be completed.

The servos are nested into the bottom of the wing and appropriate cutouts have to be made, but that takes a matter of a few minutes. The pushrods to the elevons are fine carbon rods which are included in the kit, along with all of the other necessary fittings. Setting up the servos for proper operation is well explained in the instructions.





The fin attachment method is both unique and effective. A small piece of Coroplast™ is attached to the bottom of the wing right behind the fuselage pod. The fin consists of a piece of Depron™ with flat carbon rods taped to each side. The two carbon rods fit very snugly into the Coroplast™ channel and the substantial friction holds the fin in place. The fin can thus be removed for transportation purposes, a great positive, making for a very small corrugated cardboard container, approximately 36" x 14" x 2" with some internal padding.

Installing radio gear

We spent some time figuring out placement of the receiver in the preformed slot, as it's designed for a narrow receiver with end plugs. Our M5 is shaped differently and does not have end plugs, so we opted to widen the compartment while keeping the depth constant. All of the servo and battery

wiring, along with the antenna plug, goes into the compartment bottom, and the receiver is then placed across the top of the compartment with a press fit. The contour matches the fuselage top and the receiver can be held in place with a small piece of tape. We'll place a piece of covering over the battery compartment once we get the balance point just right.

Balancing

We have a balance stand which we constructed for Diva and we checked the Alula CG location using it. (The CG stand consists of two pieces of 3/4" thick pine which are joined to form an inverted "T." The vertical piece has a circular cutout for any fuselage, and triangles cut from a rubber eraser are glued to act as pivot points against the bottom of the wing. See the included photo.) A bit of steel shot in front of the battery pack (about eight grams) got the

CG right on the mark — 25 mm behind the leading edge at the wing-fuselage junction. (Our current CG location is 26 mm behind the leading edge at the wing-fuselage junction.)

Flying

Initial test flights were a joy! First hand tosses in our relatively flat driveway were at least a hundred feet, with very little trimming needed. We moved out to the sloping field on the other side of the house once we had things set up to our satisfaction.

Straight ahead high speed throws, angled upward at 45 degrees, gained surprising height, and we were able to make two or three tight turns within the confines of the small opening in the tall firs and cedars which surround us before coming down for hand catches. We can officially say that dodging rain drops requires more exertion than throwing Alula to some pretty substantial heights.

Over the weeks since construction and initial test flying were completed, we've had the opportunity to give Alula a full workout. Straight ahead throws aimed upward at a steep angle can achieve good height, but the SAL method gets it up to some astounding altitudes for an EPP airplane.

Tight turns can be made with relative ease, and the glide angle is actually pretty good considering the various drag producing items which intrude into the air flow — servo cavity, pushrods and fixtures, open battery and receiver compartment, etc. The Alula is also aerobatic, and can loop and roll with the appropriate and coordinated control inputs.

Our most fascinating flight yet occurred at 60 Acres during the late afternoon of September 3rd. Alula was side arm launched into a flock of around 30 swallows which were happily catching bugs in a small thermal. The birds paid no attention to Alula circling in their midst, and our own little "bird" was able to follow the thermal bubble upward with them for quite a distance. We always enjoy flying in the company of birds, and this experience was no exception. The flight also proved Alula's maneuverability and thermal abilities.

Getting one!

The Alula kit is available from Michael Richter, Richter R/C Aircraft Design, 1250 Northridge Rd., Santa Barbara CA 93105. The kit is \$45.00 plus postage and handling (\$5.50 if ordered alone). The Richter R/C Aircraft Design web site URL is <www.dream-flight.com>, with the Alula page at <www.dream-flight.com/alula.html>. E-mail should go to <michael@dream-flight.com>.

We very highly suggest signing up for the flyWeasel e-mail group on Yahoo! <groups.yahoo.com/group/flyWeasel/>. The Alula was



Our Alula circles through the trees in our "back yard" after being SAL'd from the deck.

These photos were shot by Mark Nankivil with his Canon EOS300D digital camera.

Mark was so impressed with the flight characteristics of our Alula he bought one for himself immediately upon arriving back home!

a hot topic on the group for a while when it was first announced as being under development, so with the kit now available it's sure to be a hot topic once again.

At this point we are seriously considering the purchase of another Alula kit in an experiment to modify the control system to consist of central elevators and outboard ailerons. The extra servo will add a fraction of an ounce to the overall weight, but we're thinking the added controllability may make the project worthwhile.

Bill & Bunny Kuhlman
<bsquared@themacisp.net>



Multiplex Royal EVO

A Sailplane Pilot's Review by Joedy Drulia

The German based RC company, Multiplex, released their newest RC radio called the Royal EVO 9 and the Royal EVO 12 several months ago here in the United States. The EVO designation is a shortened form of the word "evolution" and reflects Multiplex's latest attempt to improve and enhance their transmitter product line.

The EVO 9 and 12 designation (henceforth called "EVO") reflects the number of channels offered. Physically, there are no differences between these two transmitters.

(Multiplex will soon release their EVO 7 in the U.S., but this radio while looking similar to the EVO 9 and 12, has severe limitations that will prevent it from being a full capability RC soaring transmitter. This article will not go into the differences between the two of them, but suffice to say that the EVO 7 should not be considered an EVO 9 with two less channels; the EVO 7 has major shortcomings that should not be overlooked when considering your next radio purchase.)

The EVO is intended to be the replacement for the Multiplex 3000 series transmitter. Many U.S. pilots have been fond of calling the Multiplex Profi series, "Pizza Boxes," and the analogy is not too far off of the mark. The Profi 3000 transmitters, while offering a powerful set of programming features, came designed in a housing that is essentially square in shape and due (in part) to the larger size of the included Ni-Cad transmitter battery, caused them to be rather bulky and heavy without the aid of a neck strap.

The EVO reflects a drastic change in Multiplex design that began with their Pico and Cockpit line of transmitters. The EVO is very ergonomic and lightweight. Many pilots chose to fly their EVO radios without using a neck strap.

The following paragraphs illustrates some of the highlights of the EVO transmitter.

Physical

There are a total of two sliders, four three-position switches, two 2-position switches, and two button switches which are located on each side of the transmitter case. There are two expansion wells which can be upgraded with user installed two-position switches. The EVO also comes with a long axis stick set that contains both a momentary button on top of the stick and two buttons on the side of the long axis stick. These two buttons are considered one half of a rocker switch. The EVO also includes short and medium axis sticks and can be user changed as desired. The small and medium axis sticks do not contain buttons, however.

There are two round buttons near the top left and right of the transmitter case. These are called the Digi-Adjusters (DA). They rotate without a stop and can be used to navigate throughout the EVO programming menus. More

importantly, however, they can be used to alter the input value of any mixer input while in flight. For example, one DA can be assigned to the rudder-aileron coupling rate and after launching, turning the DA in one direction will dynamically increase the amount of desired coupling rate during flight. Rotating the DA in the opposite direction will dynamically reduce the amount of desired coupling while in flight. When the desired amount has been decided, the DA value can be locked into place. With two DAs, each of them can be used to independently adjust any numerical value while in flight.

The EVO (like the JR8103) features a centrally located large screen that can be adjusted for contrast through the software. It can also be mechanically tilted up for easier viewing. The text is approximately at 10 points and is easy to read.

The antenna can be extended like other brands or can be swiveled so that when the transmitter is in a horizontal position, the antenna is in a vertical position.



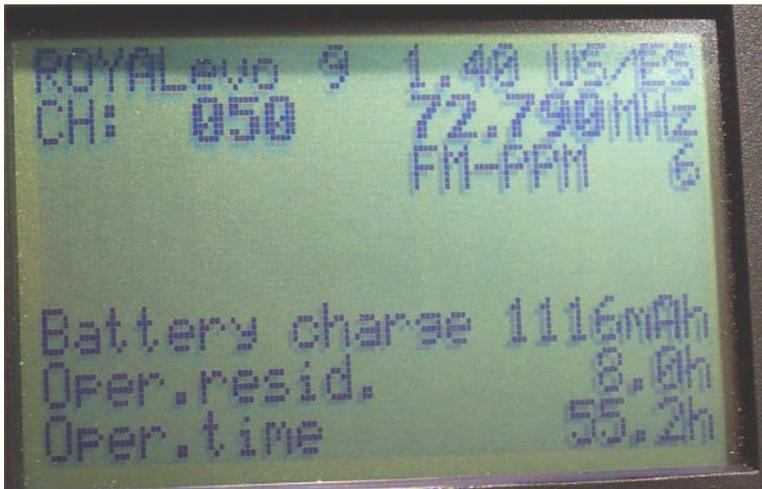
There are a total of two sliders, four three-position switches, two 2-position switches, and two button switches which are located on each side of the transmitter case. The two round buttons near the top left and right of the transmitter case are the Digi-Adjusters (DA).



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The EVO features a centrally located large screen that can be adjusted for contrast through the software and tilted up for easier viewing. The text is approximately at 10 points and is easy to read.

The EVO features digital trim buttons located below the axis sticks. Beeping tones are emitted per trim click and a different tone is emitted when the trims are centered. Pressing opposite trim buttons at the same time will immediately move the trims back to center.

The transmitter battery is AA sized NiMh 1500 milliamp and provides about nine hours of active flying on a single charge.

Programming capabilities

The programming methodology that Multiplex uses is very different from other brands. This method has led many pilots to believe and propagate the notion that Multiplex transmitters are “difficult” to program, but this is simply not true. What causes many pilots difficulty in learning to program Multiplex transmitters is that they attempt to use techniques and methods that work with other transmitter brands, but fail when attempted with Multiplex transmitters.

The Multiplex programming concept offers pilots a very simplified, but powerful programming method. The premise is simple: all of the physical buttons, switches and sliders are given a generic letter designation and not a specific function. This technique is used since Multiplex does not pre-assign any of these items to any specific function. What this means for the pilots is that any physical element can be programmed to enable any function by simply referencing the associated letter designation of the switch, slider or button. On almost all other brands of transmitters, each switch or button is preset by the factory to do only one function and cannot be used for other functions without resorting to undocumented mixes and to using spare channel assignments in strange configurations. With Multiplex, if a function is desired on a specific switch, button or slider, the pilot simply assigns that function where they want it to be located.

Another concept that causes a lot of new Multiplex pilots confusion is the concept of Multiplex mixers. While all radio brands use the word “mixers,”

only Multiplex enables the pilot to have true mixing capabilities. On other brands, the concept of mixing is a slave-master relationship — the input of one element directly affects another element. With Multiplex (and on the EVO specifically), a single servo can be programmed to accept movement commands from up to five different controls. These controls can input movement information to a servo independently from one another and without the need of a slave-master relationship. A sailplane pilot for example, could program their EVO to have a crow slider, a camber/reflex slider, a launch preset switch, full trailing edge ailerons and a flap switch for landing. The travel values and motion action (linear or curved movement) of the flap servo can be programmed separately in response to movement from each individual switch, slider and axis stick. So, while the crow slider might need a lot of flap travel movement in a non-linear motion, the flap servo should likely have less travel movement when the camber/reflex slider is moved and perhaps, a linear movement motion as well. Multiplex mixers allow the pilot to program the amount of servo movement that should occur when each control is moved. The key difference to remember with Multiplex mixers is that the flap movement can be initiated by any one, any two, any three or any combination of movement from these switches, sliders and axis sticks. The movement of the flap servo is not dependent on one event occurring before another. This simple logical approach allows the pilots to create very powerful mixers.

In addition, Multiplex also offers what is called “Mix1, Mix2 and Mix3” software switches that are used within the mixer definitions. These are used to selectively allow a specific mixer input to be turned on and off dynamically as the pilot desires. A good example would be a snap flap facility that is turned on and off with a two position switch. The two position switch in one direction could allow the elevator axis stick to cause the flaps to drop down for snap flaps and moving the two position switch to the opposite direction will disable the

elevator input to the flap servos and thus, disable the snap flap function.

RC sailplane benefits

There are many other features of the EVO that have not been covered in this review in the interest of brevity, however, the following EVO features are of particular interest to RC soaring pilots.

Timer Functions

The EVO can establish count-up, count-down, total time and lap time functions to any button or switch. In addition, a timer function can be tied to the motor control so that it is not necessary to remember to turn on the timer switch or button when flying in LMR events. The timers feature audible beeping patterns to assist the pilot without forcing them to watch the screen while in flight.

Channel Output

Any channel can be assigned to any output at the receiver in any order desired by the pilot. This means that five channel FM micro receivers can be used for hand launch gliders since each aileron servo, the elevator servo and the rudder servo can be assigned in any receiver plug-in order. The EVO does not force the pilot to use any specific servo sequencing; any servo sequence that is desired can be programmed. Having the freedom to assign any servo to any output on the receiver is a very handy feature and allows greater receiver choice and flexibility when equipping a HLG.

Ergonomic and Lightweight

The EVO is an ideal transmitter for DLG. It is thin, lightweight and features a molded ridge along the back to allow for single handed gripping.

Flexibility

The EVO does not come pre-configured with a layout that may not be conducive to your flying style. With the EVO, the pilot is able to assign functions and controls to any slider, switch and button to better fit their hand sizes, flying preference or to adapt the EVO for buddy box scenarios.

Software Mode Changes

The EVO offers Mode 1, Mode 2, Mode 3 and Mode 4 configurations which can be changed through the software without affecting the programming parameters. This allows you to loan your EVO to a visiting pilot, change the mode without affecting the model programming and then change the mode back to the original setting when the visiting pilot has landed.

Long Stock Battery Time / Battery Monitoring

The standard EVO battery allows about nine hours of active flying time on a single charge. In addition, there is a milliamp meter built into the EVO software that keeps track of the amount of remaining milliamps left in the battery. This is used to provide an estimate of remaining charge capacity presented in a format of hours and minutes. If the pilot chooses to charge the EVO battery outside of the transmitter case, a beginning milliamp value can be programmed into the EVO manually by the pilot. This is handy if the pilot cycles their EVO battery occasionally to verify the performance. The EVO also features a standard voltmeter as well.

Scanner and Channel Check

Multiplex offers an accessory scanner module with a built in channel check feature. (This module is only compatible with the synthesized versions of the EVO.) Upon powering up, the EVO will scan the airwaves in manual or automatic mode. If the EVO detects a frequency on your chosen channel, it will prompt a warning screen and prevent the EVO from transmitting.

Overseas Flying

The EVO module can be changed to other frequencies if you elect to fly in other countries without affecting any programmed models and parameters.

While the EVO features many powerful programming tools and has many positive attributes, the EVO is not yet a “perfect” radio. Here are a few limitations with the current 1.26 EVO firmware.

Expo Per Flight Phase

While the EVO does offer four flight phases each with their own sets of travel distances and trim settings, the EXPO setting on the EVO cannot be turned on and off dynamically while in flight, nor can the pilot have different EXPO settings and change from one to another while in flight. EXPO is a unique programming tool — some pilots insist upon it and other pilots ignore it. This may or may not be considered a negative aspect depending on the pilot's flying preferences.

Shift Selection

The current 1.26 EVO firmware does not contain the ability to change the receiver shift selection as advertised by Multiplex. The 1.4 EVO firmware will have this feature. (The author was a U.S. beta tester for the 1.4 EVO firmware and can verify that this is a true statement. The free 1.4 firmware update featuring receiver shift selection is expected in August of 2004.)

Side Sliders

The EVO does not have side sliders, nor is there an authorized Multiplex accessory to allow the pilot to install one.

Charger

The EVO comes with a poor "wall wart" style charger that takes many hours to

charge from a completely depleted state. Many pilots are charging their EVO batteries outside of the transmitter using dedicated chargers.

Price

The EVO is not cheap, but is priced accordingly with other brand of transmitters with comparable channel numbers. The EVO radios sold in the US typically do not come with servos and may or may not be offered with receivers.

Programming Workload

All computer radios demand more set up efforts from the pilot. This is especially true of Multiplex transmitters such as the EVO. The initial learning curve for the EVO is somewhat steeper since many past practices and techniques used with other brands of transmitters have to be "unlearned" and a new method of programming has to be relearned. Some pilots enjoy the EVO challenge and others do not. Once the initial learning stage has been successfully accomplished, programming complex scenarios and gliders is very easy with the EVO.

This review is by no means a full discussion of the capabilities of the EVO transmitter. If you are interested in learning more about the EVO here are some excellent resources available on the internet:

PDF EVO Manual

This is a free download.

<http://www.multiplexusa.com/Support/manuals/radio/ROYALeVo9_12.PDF>

PDF EVO Tutorial

This 100+ page after-market EVO programming manuscript features screenshots, illustrations and diagrams and a very detailed walk-through for programming an EVO for a powered sailplane and a full house sailplane. There are also many additional plane scenarios that demonstrate the programming capabilities of the EVO. This is a free download.

<[http://www.multiplexusa.com/Radios/Software/Multiplex EVO Tutorial.pdf](http://www.multiplexusa.com/Radios/Software/Multiplex%20EVO%20Tutorial.pdf)>

RC Groups

There is a lengthy thread concerning the EVO located in the RADIOS forum. It currently is in excess of several thousand replies. Reading privileges are free to guests. Posting and replying abilities require a free membership account.

<<http://www.rcgroups.com>>

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There was an error in identification in the last issue of *RCSD*, September 2004. The glider in the photo at the bottom of page 15 was misidentified as a Schweizer TG-2. The glider is in fact a TG-4A built by Laister-Kauffmann. Our thanks to Ron Sneddon for pointing out the error and being a faithful reader of *RC Soaring Digest*!



Fédération Aéronautique Internationale
The World Air Sports Federation



News

[About FAI](#) [Air Sports](#) [Competitions](#) [World Records](#) [Educations & Tech.](#) [Documents Center](#) [FAI Centenary](#)

On 14 October 2005, the **Fédération Aéronautique Internationale (FAI)** will celebrate its first century of existence. The **FAI** was founded on 14 October 1905 in Paris, and its world headquarters was established in Lausanne, the Olympic Capital, in 1998. To mark its special connections with these cities, FAI will hold several events in 2005 in Paris and in Lausanne. But the centenary of FAI and air sports will of course also be celebrated in other parts of the world. You will find below the provisional program of the **FAI Centenary** to be finalised in the forthcoming months.

*Le 14 octobre 2005, la **Fédération Aéronautique Internationale** célébrera son premier siècle d'existence. Fondée le 14 octobre 1905 à Paris, la **FAI** a installé son siège mondial à Lausanne, Capitale olympique, en 1998. Afin de marquer son attachement à ces deux villes, plusieurs événements y seront organisés en 2005. Le centenaire de la FAI et des sports aériens sera bien entendu célébré dans d'autres parties du monde; vous trouverez ci-dessous le programme provisoire du **Centenaire FAI**, programme qui sera progressivement complété et affiné.*

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Provisional Programme

Submitted by [tm](#) on Wed, 11/09/2004 - 16:29.

- [FAI Young Artists Contest / Concours de dessins FAI](#)
- [24.-28.01.05 - 21st FAI World Grand Prix & Haute Voltige - Al Ain \(UAE\)](#)
- [03.-04.03.05 - FAI Rotorcraft Commission \(CIG\) - Lausanne \(SUI\)](#)
- [04.-05.03.05 - FAI Gliding Commission \(IGC\) - Lausanne \(SUI\)](#)
- [11.-12.03.05 - FAI Ballooning Commission \(CIA\) - Lausanne \(SUI\)](#)
- [18.-19.03.05 - FAI Aeromodelling Commission \(CIAM\) - Lausanne 2005](#)
- [31.03.05 - "High Flyers, A Century of Sporting Achievement in the Air"](#)
- [21.-24.04.05 - Aero 05 - Friedrichshafen \(GER\)](#)
- [27.04.-01.05.05 - Salon International du Livre et de la Presse](#)
- [May 2005 - Cinémathèque Suisse - Lausanne \(SUI\)](#)
- [19.05.05 - Official reception at the Casino de Montbenon, Lausanne \(SUI\)](#)
- [? - Itinerant exhibition\(s\) on the history of FAI and Air Sports](#)
- [17.-18.06.05 - FAI Aviation & Space Education Commission \(CIEA\)](#)
- [? - Commemorative helicopter flight Paris - Lausanne](#)
- [June 2005 - International General Aviation Fly-In - Lausanne \(SUI\)](#)
- [01.-03.07.05 - LIAS '05, Lappeenranta International Airshow \(FIN\)](#)
- [14.-24.07.05 - World Games 2005, Duisburg \(GER\)](#)
- [26.-27.08.05 - Haute-Voltige Air Musical - Lausanne \(SUI\)](#)
- [27.-28.08.05 - FAI Centenary Airshow + 22nd FAI World Grand Prix - Lausanne \(SUI\)](#)
- [10.-14.10.05 - Microlight Fly-In, Paris \(FRA\)](#)
- [? - Crossing of the English Channel by 100 hot air balloons](#)
- [? - The History of Hang Gliding & Paragliding in FAI Countries](#)
- [12.-14.10.05 - 98th FAI General Conference - Paris \(FRA\)](#)
- [15.10.05 - Public Exhibition and Meeting of World Record Holders - Paris \(FRA\)](#)
- [November 2005 - 23rd FAI World Grand Prix - Moteqi \(JPN\)](#)