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Front cover: Cristiano Athayde launches Marco Winter's DG 808 at the 4th RC Soaring Gliders Meeting, held at the Serra da Moeda mountain chain near Belo Horizonte City Brazil. Text and photographic coverage of this event begins on page 4 of this issue.

Back cover: "Volara 2 Wingeron Afternoon" Dan Veres pilots his Volara 2 at Black Mountain Park, San Diego County. Photograph by Neil Armstrong
Motorola MB855, ISO 100, 1/1429 sec., f2.6
The Volara 2 is available from Ward Hagaman Designs <http://www.wardhagamandesigns.com>

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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 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 each article is 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

Posted on the Academy of Model Aeronautics website:

President signs FAA bill, includes protection for model aviation

Last week, Congress passed the first FAA Reauthorization bill in more than four years. The Bill included a special provision for model aircraft protecting it from FAA regulations.

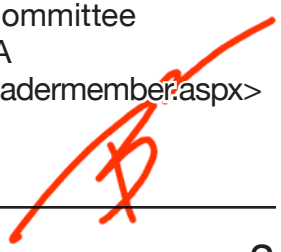
Signed last night by President Obama, the special provision in the Bill recognizes community-based safety programming as an effective means of managing the modeling activity. The model aircraft section establishes minimum criteria for safe aeromodeling operations and specifically directs the FAA to not enact rules for modeling activity conducted within the safety programming of a nationwide community-based organization.

The culmination of AMA's efforts over the past four years in achieving this recognition and obtaining the legislative safeguard is a great accomplishment for the aeromodeling community. This recognition will help with our continuing efforts with the FAA to improve safety in the national airspace.

Recognition is also due to the tens of thousands of AMA members who went the extra mile by writing their congressional leaders, making phone calls, and supporting the AMA with donations used for this campaign. Continue to monitor <http://www.modelaircraft.org/gov>www.modelaircraft.org/gov for further details.

Rusty Kennedy
Chairman, Leader Member Development Committee
Leader Member Program Coordinator, AMA
<http://www.modelaircraft.org/membership/leadermember.aspx>

Time to build another sailplane!



RC Soaring Gliders Meeting

Belo Horizonte, Brazil

By Eduardo Campolina

Photos by Rodrigo Bethonico, Adriana Campolina and Amanda Campolina

The PlanaBH group is a group of RC soaring lovers of Belo Horizonte City in Brazil. The Belo Horizonte City is located in the southeastern region of Brazil and is surrounded by many mountains making it especially suitable for slope soaring. The main mountain chain used for slope soaring is called Serra da Moeda and is 70 km long and 1700 meters high.

On August 26, 27 and 28 of 2011, the group hosted its 4th RC Soaring Gliders Meeting called 4° Encontro Mineiro de Planadores Radiocontrolados. Its mainly a Fun-Fly event and in this year has the informal thematic of Scale Gliders. Originally a local event, is common the attendance of pilots of many regions of Brazil.

Being predominantly a mountain region, we have many different and beautiful flying sites with different flying characteristics.

In the first day of the meeting we visited two of these sites. The first in the morning was a paragliding ramp which has a geography specially suitable for dynamic soaring. Unfortunately, at the time the wind was weak and inconstant permitting only light lift and some thermal.

By noon at the other place at the south of the same chain, a strong wind permitted some very nice aerobatic flights. At night we had a dinner where the announcement of the creation of Belo Horizonte Radiocontrolled Gliders Association was made.

On Saturday, the second and main day of the meet took place at our home slope site called Retiro das Pedras. A sunny day with a constant and medium to strong wind, we had the attendance of many pilots with a variety of models ranging from flying wings to large scale gliders.

The Sunday was the same as Saturday, with plenty of fun and friendship.

The success of this event has more importance as our sites are only accessed by 4x4 vehicles or by foot, walking around 20 minutes.

We had 45 pilots entered with the total attendance of more than 100 people from four states.

This 4° Encontro Mineiro de Planadores Radiocontrolados ended having the biggest RC slope soaring event ever accomplished in Brazil.

A beautiful view of our paragliding ramp called “Topo do Mundo,” a nice place for DS when windy.

Marco Winter launching his Supra

Above: Walter Tavares' Bergfalke II/55

Above right: Close-up of Robson Veiga's Minimoa

Right: Some some of the scale 'ships

Marco Winter's DG 808

Jose Mangualbe's ASW 28

Walter Tavares' CB 28 (blue nose and wing saddle) and Marcos Dias' Gabbiano

Walter Tavares' Bubble Dancer

Right: The high performance moldies.

Lower right: A wide variety of gliders waiting to fly!

Below: The Robson Veiga Minimoa highlights on the ground.

Vladmir Campolina and Rafael: stimulating the new generation

Eduardo Campolina's Fox

The Fox landing

Wallison Cunha's DG 1000

A mix by Mauro Lopes: Supra fuse, Sharon wings and home-made stabs.

Waguinho and DG 1000

All kind of gliders

All pilots

The scale gliders

from Pipistrel, for the slope

PANTHERA

After seeing a number of PSS 'ships based on manufactured civilian aircraft and more modern kit planes, our attention was immediately drawn to the Pipistrel Panthera as a potential slope candidate.

Pipistrel aircraft include the Sinus and Virus conventional powered light aircraft, the Taurus and Apis/Bee self-launching sailplanes, and now the four-place Panthera (Lycoming IO-390 engine or 145 kW hybrid-electric powertrain).

From the Panthera brochure:

"Panthera is designed by applying the most modern design and construction techniques, on top of 25 years of knowledge, experience and excellence in building aircraft.

"Panthera's organic curves are a product of optimisation through advanced, in-house developed computer tools, where each detail is designed to ensure minimum drag and maximum efficiency. This allowed for the Panthera to be designed and flown in a virtual environment with great degree of accuracy even before the first component was produced.

"Using state of the art CAD tools, all the aircraft components were packaged into a minimum and therefore highly efficient shape, while keeping the passenger cabin spacious and comfortable. It is the first aircraft in its class to be designed to be comfortable for four passengers of any body type.

"Realizing the complex shapes and structures of Panthera was possible only by using modern rapid prototyping/milling techniques.

"By directly translating the CAD models into complex shapes it is ensured that the predicted aerodynamic properties of the aircraft are realized, and that the structural integrity matches the results of the finite element predictions.

"Attention to details is visible also when it comes to airframe components and equipment."

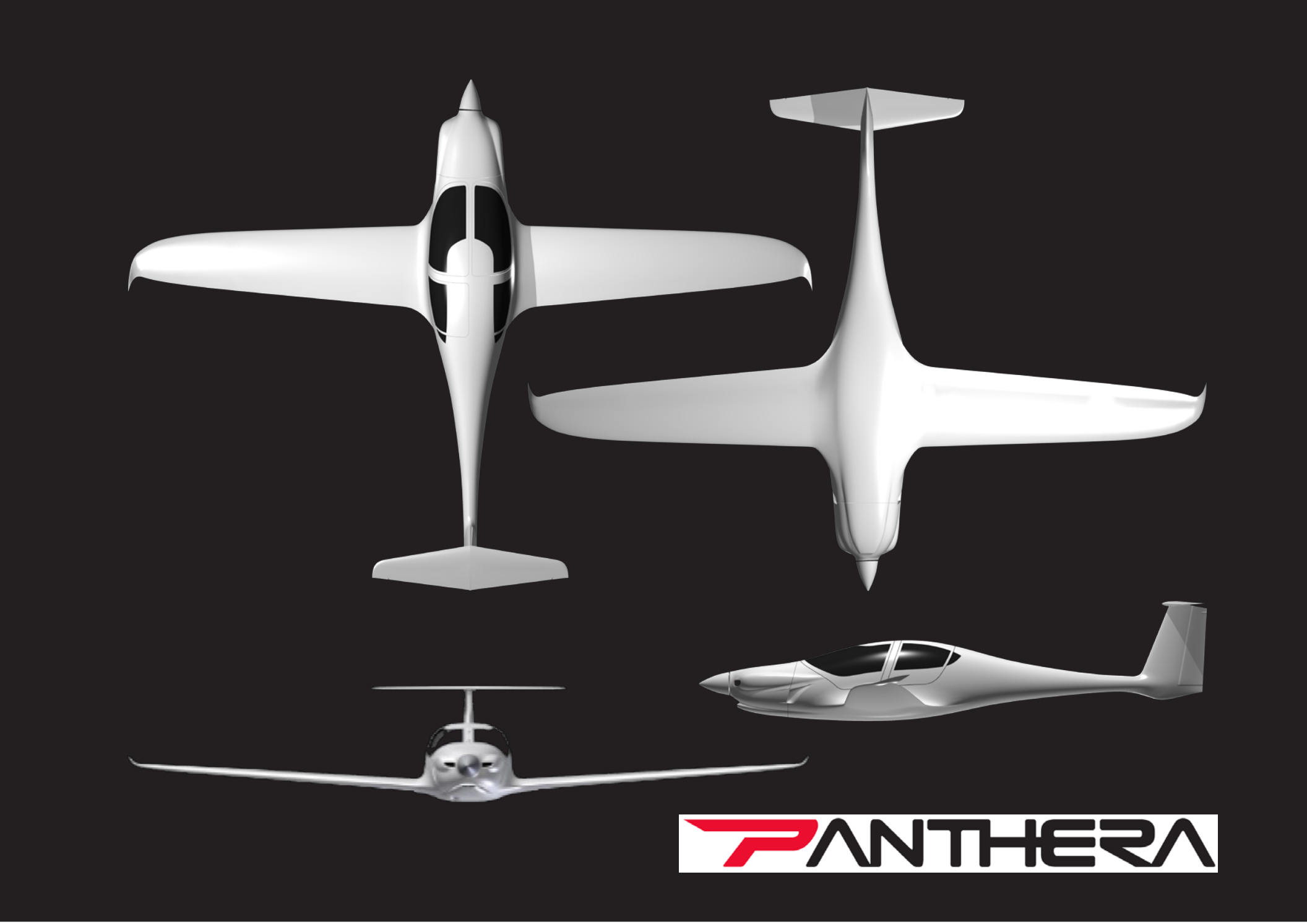
<http://www.pipistrel.si>

PIPISTREL d.o.o. Ajdovščina, GORIŠKA CESTA 50a, SI-5270 AJDOVŠČINA SLOVENIA

Proportions

Wing span	10.86 m / 35 ft 8 in
Length	8.07 m / 26 ft 6 in
Height	1.90 m / 6 ft 3 in
Wing area	10.9 m^2 / 117 sqft

<http://www.pipistrel.si/plane/panthera/technical-data>


PANTHERA

Gordy's Travels

Do You Want to Get "Better" at RC Soaring? Contest Fly!

I wrote an article a number of years back in this column titled "Interrogation of a Sport Soarer," and it reflected why guys would come to the club field to fly around, but if a contest was held, they were no where to be seen. To sum up the article, it turned out the reason for this was that the guys didn't feel that their skills were up to "competing." They didn't know what "task practice" was or how to do it. They had no interest in "losing," "being beaten," "being embarrassed," or worse - hurting someone due to the lack of their skills.

My own "first contest" experience gave me some insight and empathy with that attitude.

I was an RC power flyer, but had a strong attraction to RC "gliders" from the very beginning of my RC modeling. I heard the local RC Soaring Club, the Milwaukee Thermal Soarers, was hosting a big contest nearby that weekend so I decided to give it a shot. When I arrived all the pilots were very busy getting their own sailplanes ready to fly, so when I approached a few to ask how I could enter, how a contest worked, how to use a winch, etc. I got a pretty cold shoulder. I thought, "What a bunch of jerks!"

Looking back I can see now that it wasn't the appropriate time or place to begin my contest soaring training, but it did put me off the whole idea for about 10 years. But it did whet my whistle by watching the skills some of the guys showed, I saw potential! That potentially consistently long flights were possible...the dream of all sailplane guys!

Looking back, I saw that RC soaring contests had become viewed as "sporting events," as opposed to a chance for RC soaring enthusiasts to fly together in a measured way so that each could evaluate his skills. It had turned from a hobby to a sport attitude. Guys started talking about beating so and so, etc. Name calling indicated various "cheating" techniques like "sand bagger." (That's where a pilot waits to fly his round until he sees other sailplanes indicating great lift in order to protect or improve his score, or his chances for a max'd flight time.) It was that turn I think that caused many sailplane pilots to avoid contest flying.

As I traveled and flew my sailplanes along the way, I got to meet and fly with just about everybody, everywhere in the hobby. After moving to Kentucky, where I stopped flying powered models and switched completely over to sailplanes, the local club was very active in LSF and contest soaring which gave me a chance to learn about task soaring gradually. Had I not had that experience, likely I would never have learned how much more fun task soaring would provide than

just flying around, and how much better my sailplane piloting "could" become.

You see, up until then I'd thought I was a pretty hot stick! I could fly the fastest and biggest powered models with crowd wowing skill, but getting more than about five minutes of thermal flight time was strictly a matter of luck. I could land my "gliders," and that's what I thought they were at that point! Later on I learned the difference between a glider and a sailplane - a glider is any airplane that lands without a motor, a sailplane is a airplane that goes up without a motor - and I definitely was far more interested in the latter!

What I really didn't understand is that it really wasn't luck that caused some guys to consistently get long flights - it was study, thought and task practice.

Sure some of the guys told me that it took "practice," so I did that, I practiced! Well what they didn't tell me was what "practice" was. I assumed it was just flying more often.

It was when I visited some flying sites around the country where really skilled RC soaring pilots flew that I got to see what the term "practice" really meant. Instead of just flying a lot, those guys would set up a landing tape graduated in inches, and they'd have a Talking Timer set for 10 minutes counting down. "Task Practice" was different than flying around a lot, and it was task practice that made the difference between the top scoring pilots and the rest of the pack. They didn't "land at their feet," they landed on the same landing task set up as was going to be at the next event they were going to attend!

That was a lot of years back, and in spite of hundreds of contests passing, with a lot of discussion about the benefits of contest flying, there was still the same schism between "sport flyers" and contest pilots. In fact, a whole separate personal achievement program, based on the LSF Achievement Program, was created in order for "fun flyer" guys to have something that didn't involve contests as a requirement!

The ironic thing was that in fact, the Sport Flyers Achievement program turned "fun" flying into Task Soaring! No more just flying around aimlessly, nope - stop watches and landing tapes were required to be a Sport!

Okay, so to be fair, a soaring pilot has to ask himself if he wants get "better." Without a definition of what the word "better" means, it's not possible to achieve it. If "better" means he indeed wants to improve his flight times and landing accuracy (luck), then it takes a program of graduated steps - achieve one step then move on to a more difficult one.

LSF level 1 asks the pilot to put up two flights of 5 minutes. To most new-to-task-flying sailplane pilots that 5 minute flight seems impossible, or in the least improbable. When you then tell them that it won't be long before they will be able to put up two hour flights, they look at you like you are crazy!

Yet it happens. With those grueling first two 5-minute flights comes confidence and the belief in possibilities. When they get their first LSF2 15 minute flight, they are exhausted, mentally and physically. No way they'll be able to put up another. Yet after they actually do, suddenly the new average flight for them is 10 minutes. However, they exclaim, "No way will I be able to keep a sailplane up for the LSF3 30 minute, one hour or two hour thermal flight goals!!!" Etc.

All of us contest pilots "fun fly" more often than task soar, but we have more fun at it than the guys just out flying around. The reason is that we can do what they do, but they can't do with their sailplanes what we can do with ours... or theirs! Even though they recognize that it's the contest pilots who consistently are highest and up the longest and never have to walk to get our models on Sunday club days.

Below are some excerpts taken off an RC Soaring Exchange thread in response to pilots who felt that there is no good reason to fly contests. You see, just like me way back when, they think its ridiculous to spend all that time and

energy just to get to fly five or six flights in one day at a contest! (RC soaring giant Chuck Anderson reminded me of that comment which I'd said to him when I'd visited his home for the first time!!!)

I didn't understand how much more there was to RC soaring than I knew about, and how much task soaring (contests) would unveil of that "more" to me, and could to them.

Before they were contest pilots, these guys were "fun" flyers. If you told them then that they were missing out on a lot more bang for their soaring minutes and dollars, they would have said, "What does that mean?" But once they decided that they wanted more luck - to get "better," that they wanted to be the one who was always highest and up longest, and wanted to avoid having to walk for their models on landings - they saw that there was a tie between contest flying and getting "better."

"Contest Flying" is not the same as flying contests, it's practicing with a countdown clock and landing on a measured tape - Task Soaring.

The attitude of "them and us" was pointed out as a reoccuring RC Soaring Exchange theme over the years with the exclamation of "Contest talk dominates the RCSE!"

Well, frankly, that's because contest pilots have "more" to talk about. Again because they did/can and do still "fun fly" but also task soar. Contest pilots have more things to talk about when it comes to discussing reading their model's indications in flight, identifying lift/sink cues and working lift, improving launching techniques, optimizing their sailplane's setup. Optimized in order to help them "fly around"? No, to help them max their flight time goals and landing accuracy.

Sport flyers mostly don't know anything or very little about the details of sailplane set up, balance, tow hook locations, etc., and likely don't care.

So to answer those RCSE posters who brought up the ol' "them and us" lament, three really good guys who have been flying RC sailplanes a long time, all builders, all very actively having fun flying their sailplanes, decided to comment about why they decided at some point to fly contests.

The first is from Jack Womack in Amarillo Texas:

> "Ben Hogan once said 'Practice doesn't make perfect, it builds only consistency. Bad practice is worse than no practice at all. However, good practice with a mentor makes as close to perfect as possible.'
>
> "I have been playing guitar since I was 7... 53 years... but I never had a lesson. My son took lessons and in years was playing rings around me.
>
> "Build logs on RCG are a teaching tool. I hope that the trouble I have gone to are helping others, and I still learn from other's build logs, even after building for 50 years. That's alll anyone is saying. Competition is... for me... not an excuse for motivation, but the result of it. My motivation to be a better and better pilot drives me to go to competitions and learn from the best.
>
> "That's the way I see it, anyway..."
>
> Jack Womack
> schrederman@yahoo.com

The next is from Mike Reagan, a full size accomplished sailplane pilot, LSF5 and top RC soaring contest champion.

> "Wow! You guys really don't get it. I fly a lot of the time just for the pure joy of soaring. How did I get to this point? Competition! Developing your skills in contests can make soaring a lot more fun and make crashing a lot less common.
>
> "Getting together with like minded people gives you a chance to learn new skill sets from the best. Playing guitar in a jam session with your idols or timing for each

other with a world champion is always fun and you learn why they are the best at what they do. You can't help but get better after being motivated by these guys. You really will not get better if you only fly alone and don't know what else is out there. The same with music or just about any other passion in life."

Mike Reagan
mdreagan1@gmail.com

And from Mark Miller of Isthmus Models, sailplane wood kit designer and supplier:

> It's the same reason why I went to a road racing school but will never compete at LeMans. The journey is where you learn. The end goal is one of the rewards for taking the journey.

Mark Miller
isthmusmodels@gmail.com

The last thing any skilled RC sailplane pilot wants is for any other sailplane pilot to have a short flight! Contests provide a venue for RC sailplane pilots to get together for a day of doing what they all love to do, fly RC sailplanes, and allow them to compare their practiced skills with other pilots via measured flight and landing tasks.

Sure, at the end of the day the computer spits out the top 3 to 10 names who's precision was sharpest that day, but in general everyone won. They got to fly RC sailplanes together, unlike sport soaring which is very solitary.

The pilot did have flights, but they were "his" flights, not "the" flights. LSF forces pilots to share and help each other as each task needs witnesses.

So, "them" and "us"? Yes, contest pilots want them to become part of us.

If you want to know more about Task Practice or Task Soaring, it doesn't take a village or even a contest to do it. Just shoot me an email and I'll provide a copy of the *RCSD* articles on the topic. And yes, you WILL get "better".

See you on my next "travels." — Gordy

TWO OCEANS SLOPE SOARERS AEROBATICS EVENT 2012

Kevin Farr, kevin@fvdv.co.za

I think I am going to start this somewhat backwards...

With a huge kudos going out to mother nature for once more making an appearance, and this closely followed by our fantastic sponsors without whom we would never be able to award our competitors in such a fantastic manner. The Sponsors this year, as before, were generous beyond belief. So here are the guys and dolls that we all within the slope community should really be supporting and as such keeping the slope scene very much alive and well!

Southern Hobbies
Hobby Warehouse
RC Hobby Shop
Anton Benning (AB Models)
Sharklady (http://www.sharklady.co.za/)
AMT
Cape Sailplanes
Traplet Publications
Dixies
InterMet Africa
Dave Greer and Fragram
Russell Conradt
Chris Leal
Kevin Farr

Now back to the action!

Dave Greer and Russell Conradt headed the charge into Cape Town from Durban and had arrived by Wednesday already to start practicing like the clappers, and were closely followed by the rest of the Durban crew totalling seven happy slope souls in attendance for the competition.

We can only thank them immensely for their dedication to slope soaring, in committing their time and resources to making this event successful once again.

And so mother nature delivered them two whole days of intense and perfect South Easters to allow them to come to grips with the Cape scene once more.

Come the competition morning and the early birds gathered at Red Hill in the face of 50 km/h South Easters and the decision was made to move to Smitswinkel Bay (shown in the lead photo) for the day, as it tends to hold the howlers much better.

A brief pilots briefing was held and then the first rounds took place in near perfect conditions.

As the Expert class was up first, the pace was intense and competition nerves rife, but in all fairness the level of skills had improved dramatically and the entire class was far more compressed in terms of scoring than any other previous year.

Right upper: The Durban Crew

Right: The Cape Town Crew

Above: Safety Officer Bill Dewey

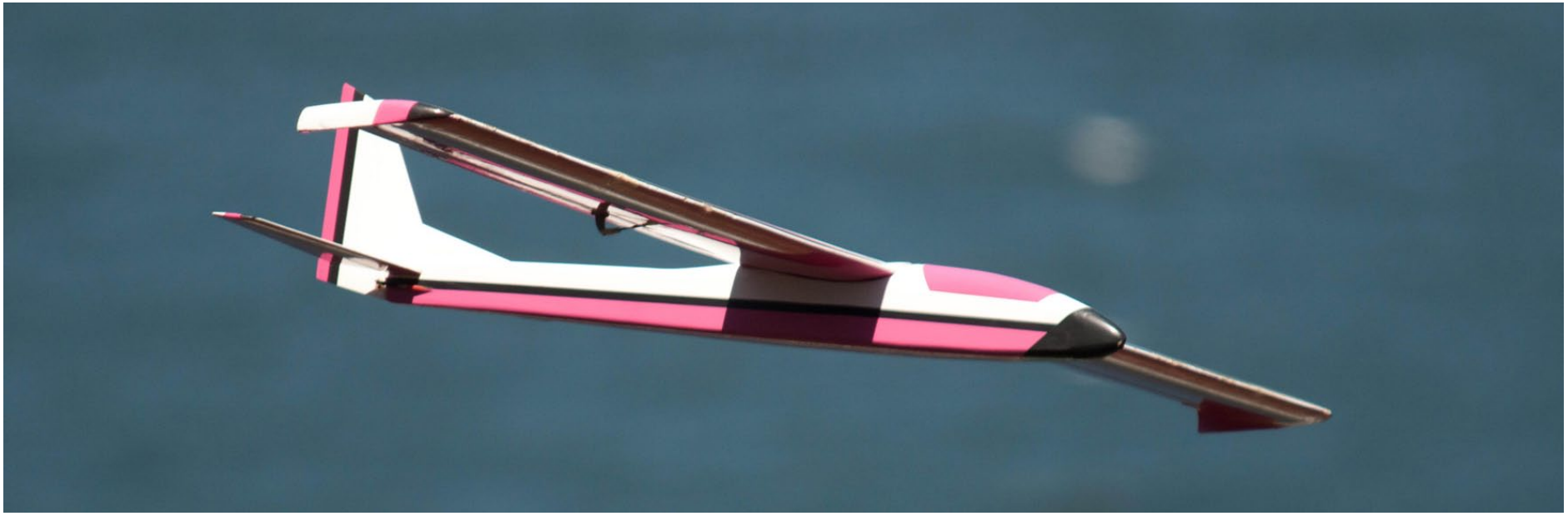
Right: TOSS Chairman Christo Le Roux reigns over the Pilots Briefing Session

Launching at Red Hill

Opposite page, left: Christo le Roux and Anton Benning

Upper right: Andrew, Kurt and Claude - Judges in action

Right: The switch to howling Red Hill



Primerius

Vector

Scenes from the TOSS Aerobatic Event 2012

Next up was the Sportsman's class and enter a dark horse, in the form of Dave Lentle, previously a Durban resident who now calls the Cape his home, and who had only entered the night before but has the decided advantage of flying the real thing for a living.

Along with Marc Beckenstrater, these two really took on battle and led the Sportsman's field in very good lift conditions.

Through the 21 pilots partaking in both classes, the level of skills had improved immensely and the scores were looking close in the top orders of both competitor sets.

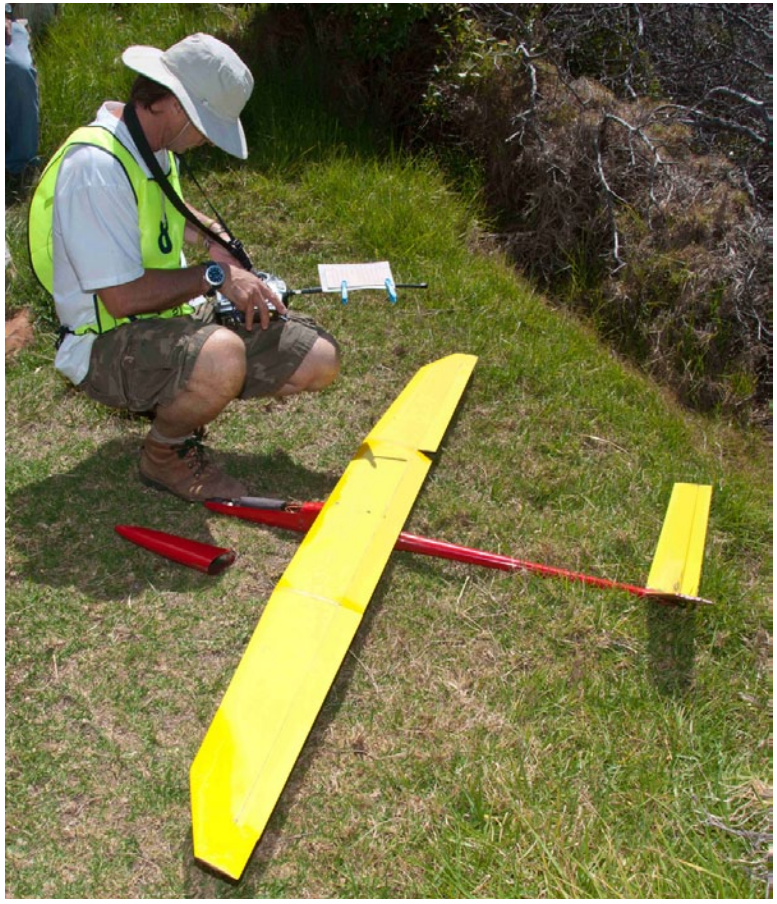
Just about lunchtime, the wind did one of those nasty little mood swings and went a tad southerly, just about enough to destroy the lift. As much as Marc Wolfe and myself attempted to get the second round underway, the lift just simply dissipated and turned nasty.

Steve Meusel led a charge back to Red Hill and called it good, although strong. Kudos to the entire contestant group - judges, officials, one and all - who willingly packed it all up and made a run for Red Hill.

And yippee was it strong!!!

The first round was up and running soonest and as the afternoon progressed the wind even ventured to get stronger. So the rounds went extremely quickly as the gliders were simply pounding around the sky, screaming like banshees and carrying on much better. The intense blow back on each move really tested the pilots at levels they had not required at Smitswinkel Bay in the somewhat tamer conditions.

The Maestro gets some company



Above left: Dave Greer and Michel Leusch go through the moves

Above: Prepping the Aldij

Left: A Dorado gets a launch from Mally

With round two firmly in the bag and the day waning, it was decided to retire to the ever present Dixie's and enjoy a cool one or two.

Sunday was almost a replay of the year before with no wind and hot conditions, so we all waited it out at Kommetjie before retiring to Dixies for the prize giving. True to form, the scores were really close and in the end Michel Leusch took the honours ahead of Marc Wolffe and Louis Genade in the Expert class, and Dave Lentle took the honours ahead of Marc Beckenstrater in the Sportsman's class. With all the prizes handed out we closed off one more fantastic event on the Cape slope calendar.

Four years in a row, four contests run, what a brilliant achievement one and all!

The Judges - Andrew Anderson, Claude Mackrill and Kurt Mackrill - thank you one and all for your time and energy spent up on the judging line.

Contest Director - the very able Jeff Steffen and Safety Marshal Bill Dewey - thanks for a slick and well run event

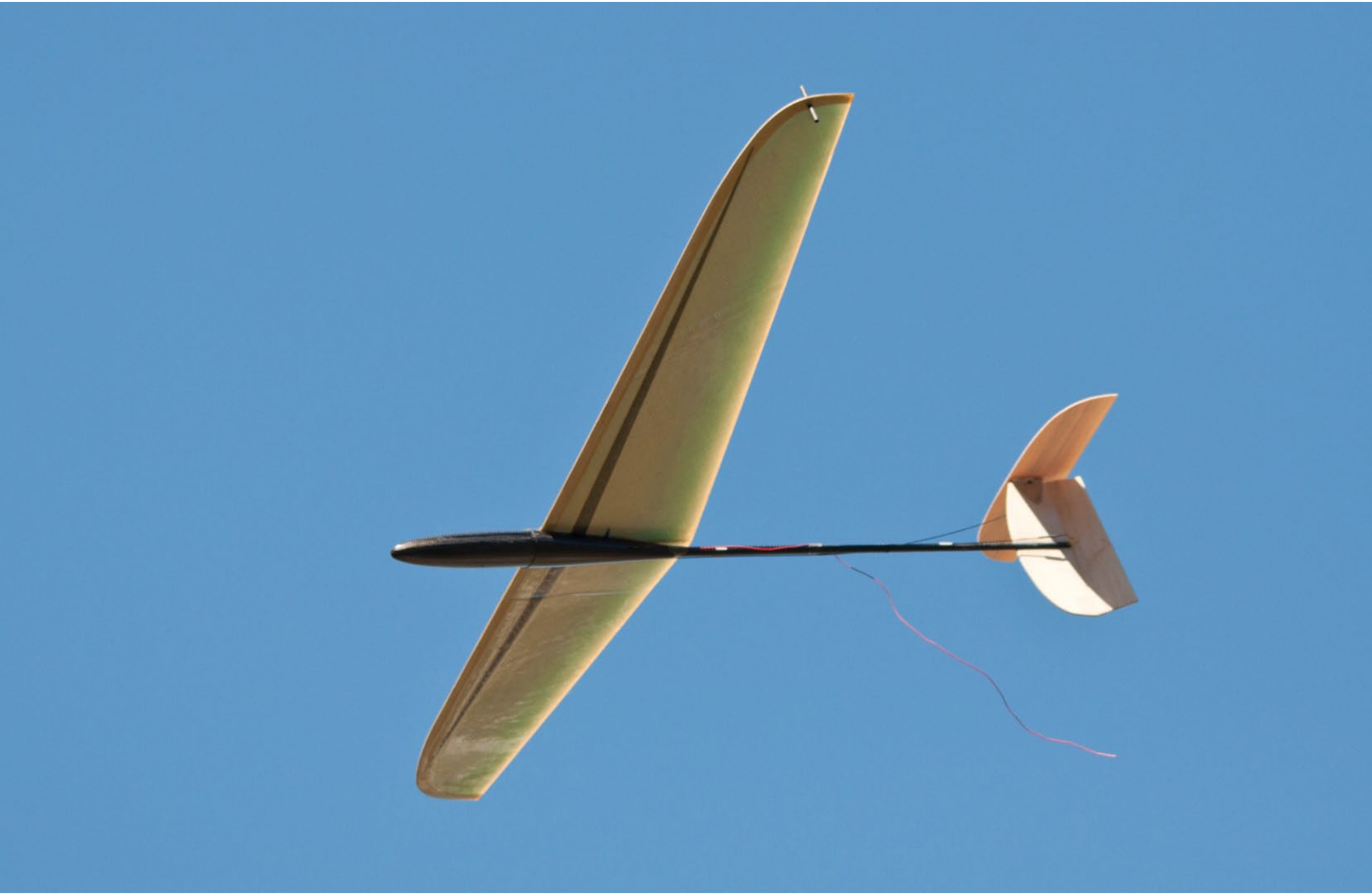
The catering team headed by Theunis van Niekerk - thanks for making sure we were all well fed and looked after once more.

Well done everybody involved and well done Two Oceans Slope Soarers for hosting the event.

Above left: Russel Conradt gets a launch

Left: Marc Wolffe's Primerius gets a launch

Opposite page: Sunday light flight conditions




Maestro

"Thank you to all of the sponsors!"

Opposite page: Home-built Maestro in flight

Two Oceans Slope Soarers Aerobatic Event 2012 Results:

Sportsman Class

1. 100.00% Dave Lentle
2. 86.20% Marc Beckenstrater
3. 83.89% Luke Johnson
4. 81.58% Dean Halley
5. 69.54% Anton Benning
6. 54.20% Mark Phillips
7. 52.45% Hans van Kamp
8. 46.78% Schalk Human
9. 45.24% Noel Cochius
10. 32.35% Ryan Matchett
11. 9.80% Rudi Smook (*)

Expert Class

1. 100.00% Michel Leusch
2. 93.40% Marc Wolffe
3. 92.81% Louis Genade
4. 87.27% Kevin Farr
5. 83.82% Christo Le Roux
6. 75.29% Steve Meusel
7. 69.47% Malcolm Riley
8. 64.78% Dave Greer
9. 33.00% Russell Conradt (*)

(*) = Did not complete

1st place Expert Class - Michel Leusch

1st place Sportsman Class - Dave Lentle

Rudi Smook and the lucky draw prize

HOW TO FLY

glider / motor-glider

by Marc Pujol, marc.pujol1@free.fr

Learning how to control a glider is often a childhood dream. Make like the birds, enjoy the lift in the silence of nature, surf the slopes with face in the wind... this is an activity that brings us closer to our original environment.

If, for driving a car, you need a number of lessons, what about the pilot of a flying machine in which the third dimension complicates things terribly.

But it’s so easy on the computer! So we try by ourselves and we become disillusioned very quickly, without understanding, in less than 10 seconds. Reality is always more painful than the virtual! Everything to disgust you!

What to do? Persevere? Give up? You just have to do otherwise!

This article is for you to get some tricks for learning how to control your machine. Flying is not complicated. Everybody can do it if you practice and do your exercises. And if you play both on the computer and in reality, this learning period will last only two to three months. Then, open spaces will be yours!

Interested? So here we go!

For the sport or for the fun, one unique solution

You can approach the model aircraft practice in several ways:

• For the fun. This is what the majority of us want. “Ready to Fly” models allow this today and this can bring us great fun.

• As a motorsport. Flying is great. Understanding how it flies is also an interesting task. Designing and building our own model is a quest that provides enormous satisfaction, even if the results are not always up to the expectations. We do not win every time.

Whether what we want, to have fun or “go further,” the two approaches require some caution. A machine, even small, can become a danger if not well controlled.

Except for being a “genius,” it is most likely that you will do all the “nonsense” possible before reaching your goals.

The adage says “it is by forging that one becomes blacksmith.” Yes, but here, security - yours and others - requires some caution and to weight the consequences of danger. This is especially true when speaking to young people under 10 years old or even younger teens. Their technical knowledge is limited. It is then very easy for such beginners to fall into a trap.

To get started safely and in order to avoid a number of pitfalls, do not start alone. Join a club. It is the only truly effective solution!

You’ll find everything you need, starting with people of experience, fully ready to help you!

Do not hesitate. Never mind that the field right next to you seems ideal. Agree to make a few more kilometers. And after practice, you will see that the said beautiful field close to your house is in reality a real trap - too small, with a hedge tree that disrupts the flow of air, misguided, a fence that will act as a steel spider web. So learn in a club, and when you will be confident in your pilot sense and in your flight knowledge, explore unknown territories.

The secret of a successful learning

To learn, without crashing, and safely in the respect of others, two tools are at our disposal:

• The dual control. In every club there is always a dual radio-control system and someone or several persons who agree to help you to learn with this wonderful tool. There are even often the associated models available that will allow you to begin before buying your own equipment. The various tips that you will collect will help you. This is the right choice. You will avoid investing in the beautiful model which is anything but one for a beginner. Recall that beginner model must be very robust, easy to fly, and that its appearance deteriorates consistently according to the hours spent flying. In short, your first model will suffer from all your mistakes, and be sure that it will be destroyed one day and, unfortunately, sooner than what you expected.

• The simulator. This invention is perfect to progress safely. Although reality is somewhat different from what you see and feel with a simulator, it is a wonderful tool for exercises. That’s how I learned to spiral the plane upside down or to understand the timing needed to make a circle with rolls. After many virtually crashes, I could pass to reality. After a few adjustments, I was pleased with my figures without having to regret a single crash. While nothing replaces real flight, a simulator is a must.

Using both tools and performing the exercises below (the week on the computer and the weekend full scale),

you will see your progress: In two to four months, you will start to be autonomous!

Of course, these months will also be used to understand the basics of “a model,” how it flies, and what are the safety rules to be followed. We cannot enough insist, but man tends to forget or to take shortcuts, and that is where we fall into dangers. So let’s do as in commercial or military aviation, let’s think safety!

A bike, a car, are regularly reviewed and checked. A plane, too. Learning must therefore incorporate this aspect. Once alone to fly, landings will be harder, and the plane will suffer more. The risk of breakage and injury will be much higher. Look at the beginner’s planes after only the first six months of practice. Full of marks and repairs. So, to avoid some injuries and crashes, it is essential to complete the piloting learning with the maintenance and the construction learning. Building your first model, for example, even if it is quite ready to fly, is still interesting. It’s a start, so no need to be complicated!

Your first steps

Here you are, enrolled in a club ready for your first lesson.

Are you well equipped? Let’s verify.

You just need the small modeler’s equipment:

- A cap or a bob (I prefer the first solution)
- Sunglasses
- Tight clothing (no skirts for women or scarves for women, as they could find themselves trapped in the propeller of a model).
- A water bottle, because staying with “face to the wind” dehydrates you, especially if is 30 °C and with wind.
- Sunscreen according to the skin, time and degree of tanning.

Of course, you can also fly in cold weather. This will be thin gloves, thick socks, heavy jacket. But no floating clothes (coat, jacket open...)!

Yes, our activity is performed outside and therefore asks to be equipped accordingly.

Not rocket science. That makes sense.

Your first lesson will be about security. You will need to learn:

- How to use the frequency board.
- What are the areas where flying is prohibited?
- What are the special instructions to access the area?
- How to request or announce a takeoff or a landing.
- Instructions specific to the operation of the club.
- Etc.

Everything is OK? You then can start to enter into the world of aviation.

Then feel free to a walk around. This will allow you to find easily your model “in case” it becomes lost. Later, it will also help you understanding the good places for thermals. But this is a bit premature at this time.

But you are there to fly! For sure! However, you have not finished with the “administrative” tasks. Because you must now learn other safety rules: Those relating to your model.

Whether it’s the first flight, or after you made a repair, or whether the first flight of the season, better to make some checks. I advise you to make even these few checks in the beginning of each flying session.

Yes, before flying, check the model in depth. And that’s not what we call “pre-flight,” but rather “daily visit” that I propose. The visit “before flight” will then follow.

As you start, learn to check the plane:

- Structure of the wings, fuselage, stabilizer and rudder.
- Servos attached.
- Pushrods rigid.
- Good bonding of horns and clevises.
- Incidence of wing and stabilizer.
- Neutral position and function of any parts in movement.

- Centre of gravity.
- Charge of the batteries.
- Etc.

In short, your tutor will explain what makes your model ready for flying.

Do not skip this part. This is fundamental. How many times have I seen the first flight of a model end with a stunning crash coupled with a great shout! And often only for a model poorly verified or not verified at all!

Your tutor will take the opportunity to teach you the different components of the radio control, the role of different surfaces and how they act.

How does the air act on control surfaces? It is important to check the movement of all control surfaces. We've all made the mistake of flying with reversed controls... and the end has not always been happy.

For youngsters, it will also have to go down to the basics that may appear natural to us, the adults. For example, they will have to learn some about electricity, the dangers of a short circuit, the "plus" is the red, the "ground" is the black (or brown), and the signal is the white wire (or yellow). They will also have to be able to identify each element, how to connect a radio, how to install it, how to store a battery... In short, they will gradually acquire the simple knowledge that will make them a real modeler.

Also learn how to handle the radio remote control, selecting the right model programmed, and how to make a few adjustments - trims, deflections, etc.

Please, no programming of a complete model in the field. This "heavy" work is to be reserved for the workshop.

Feel free to cut your training flight by small theoretical courses. This will relax everybody (student and tutor) while providing a wealth of useful information. For example, do not hesitate, in a session, to open the transmitter. If you do not do it with your tutor, you will do it one day alone, and if you are "young," it may turn to experiment... with the more or less important consequences for the material or for the human.

To avoid an accident, you have several options:

Implement defenses, or you have the solution of the explanation. "If you open the box and you remove what's inside, you will have the table full of parts and screws of all sizes. So before you disassemble, try to understand, look, observe, note, takes pictures, anticipate what may happen. Here are some ways to know in which order the parts may be reassembled, here's how not to lose them, here are some risks that you will meet..."

It goes without saying that I prefer the second way to limit the damage. This is certainly longer, more difficult, but when it is assimilated, applications go far beyond the purely glider practice activity.

"Say NO" suppresses creativity. But the modeler activity is a vector of great creativity. Never say never, explain, train...

Good! The model seems ready. You know where the pitching, rolling, yawing and motor sticks are, even if it is not yet clear for you. It's not a big deal! Off we go? Yes, but as for every commercial or military pilot, let's do the "pre-flight" check.

For this, adopt a certain timeline: Force yourself to respect and to always do it in the same order. It starts on one side and finishes at the other side:

- Check personal equipment (hats, glasses, etc.). Later, this operation could create some dangers.

Real life example: Mr. X had forgotten his cap, so he hands the model off but the radio is still around his neck. His cap is right next to him. He bends to pick it up and in the movement his sleeve touches the throttle stick and the engine starts.

Another example: Mr. Y was interrupted in his preparation. He forgot his glasses. During the flight, the model passes through the sun. The pilot loses sight of his model for several seconds...

So "I prepare myself, and then I prepare the model."

Preparing is also a question of health condition. Am I able to for sure dominate my machine? We see too many times flights that are “not mastered.” Add on top a bit of illness, or alcohol, a low sun, a fast model, and everything is mixed to go right to a crash (and of course on a car or even more...).

If you have any doubts, ask for help or give up flying. Replace this flying session by a session of chatting with others.

• Make sure the model battery is turned off and unplugged. If the receiver battery remained connected, there is some risk it has been discharged during transport. Always turn the transmitter before the receiver of the model so that it always receives the radio signal and not a parasite which can be interpreted as the through signal. Similarly, once the flight is completed, the model must be turned off before the transmitter. With such a procedure, you will avoid unwanted and even dangerous movements of the model - the start of an electric motor for example.

• Turn on the transmitter.

• Check the model set-up. I’ve crashed twice for not respecting this rule!

• Check the position of the sticks and trims (zero throttle in particular, an electric motor is quickly started).

• Ensure that, in the case of a motor-glider, the propeller will not endanger persons or equipment. Have the correct model on the transmitter and position yourself so that any incident can not cause injuries:

• Put the model in the safety position.

• Orientate the model in front of the wind.

• Radio at hand but not in the plane of the propeller.

• Propeller can rotate freely.

• Make yourself safe from the plane propeller (behind the plane of the propeller for an electric plane).

• Turn on the receiver.

• Check the direction of the controls. Check all control surfaces and the way they have to move. I lost a model for not having checked the correct operation of the ailerons. The elevator and rudder were correct, however. Another time this check detected an improper selection of the model number at the transmitter, thanks for this checklist.

• Check the range of controls. I lost a model because the elevator servo pinion was broken at the very end. I tested the model on one end and not for the entire operating range. The flight was successful until I had to use full down elevator. Then no chance to escape to the crash. Difficult to forgive it!

• For motor-gliders, make sure you are not likely to hang the throttle which is to be kept in its “engine off position.“ How many accidents did we have for an accidentally operated throttle!

• For motor-glider, connect the flight battery.

• Check the operation of the propulsion (for motor-glider). Do it with full knowledge of potential hazards!

• Head towards the takeoff point, your model held securely with both hands so as not to risk hurting someone or being injured by the propeller. Attention to the throttle! The easiest way is to have a “sherpa.”

Refer to Slide 1

A small modification to be sure that the Engine will not be turned on improperly. A rotating stick have been machined and installed.

Before take off

Finally here you are for your first flight! Now you’re ready.

But never forget everything that has just been said. Repeat them again and again! This is for your physical safety and the safety of others.

Prior to “launch,” a last few tips:

• Think what you are going to do. After, it will be too late.

• Check the position of the sun.

• Respect the pilot area.

Slide 1

• Anticipate the way to reach the pilot area after takeoff.

• Announce your takeoff intentions and wait for agreement.

• Do not cross the runway without the agreement of all other pilots.

• Before you leave make sure you are not likely to collide with another flying model that is coming. Do not laugh, it happened to me! A model had taken off without warning or watching while my glider ran along the slope gently. His plane hit nothing but mine.

• Make the model take off by a third party. You can have both hands free to maneuver the control sticks and your mind will remain fully focused on the flight of your model. Needless to say, this person must know what it does and how to start your model. Talk and agree when and how to start.

In flight:

• Respect other pilots

• Respect the flying area

• Announce your intentions (front passes, landing...)

• Do not go away without the agreement of other pilots

• Avoid maneuvers coming directly to you. Prefer paths that are not likely to end in a collision with yourself or others

In short, apply the rules of the perfect Gentlemen living in a good society.

All the safety issues done, the model is now in the air with your mentor and you controlling it. What to do? Keep in the air without specific goals?

For a good learning experience, I suggest various exercises that will take you gradually towards full autonomy and even a little beyond.

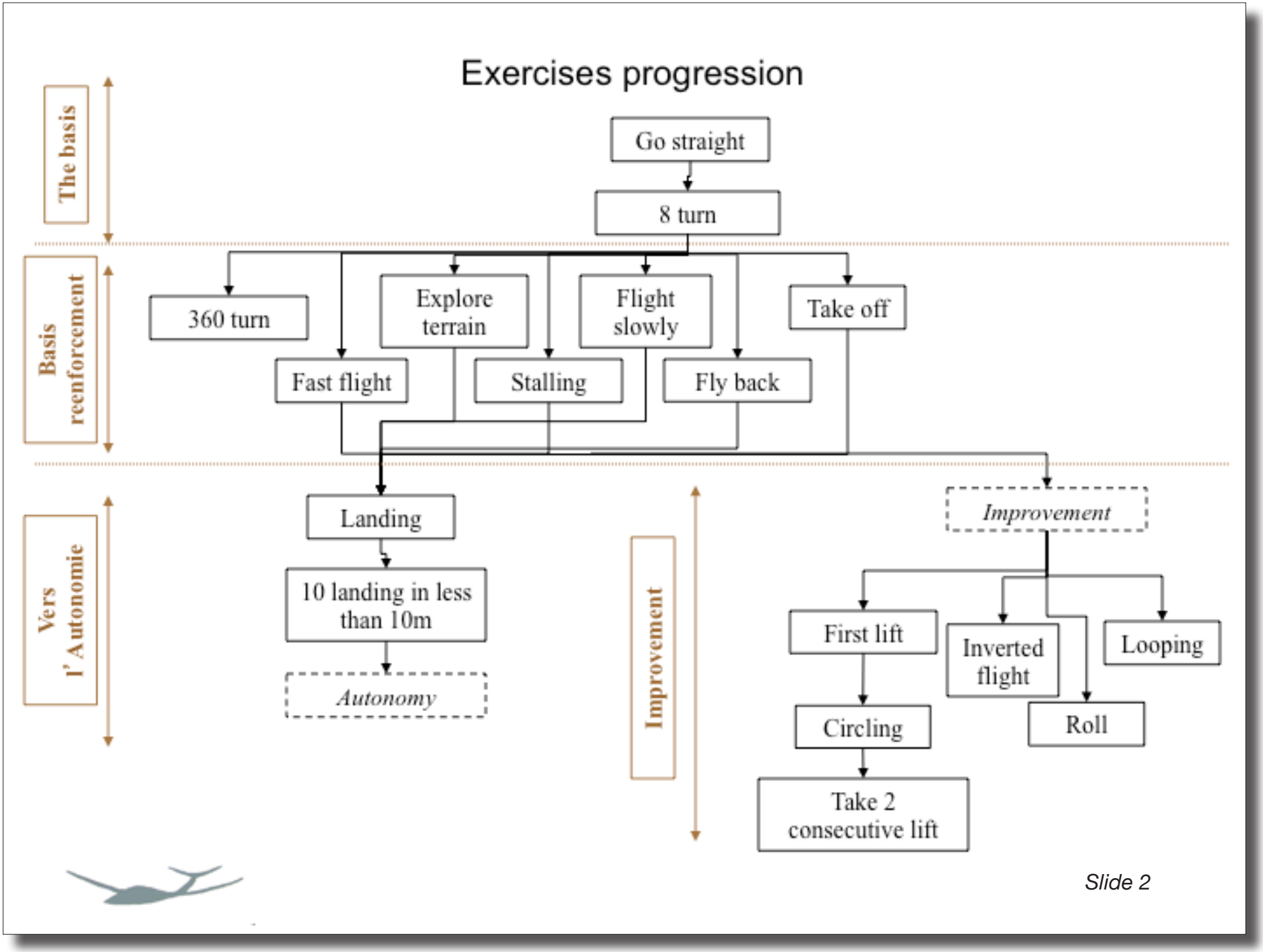
You will need at first to master the basics of flying - straight line and turn into the wind.

Once mastered, you can continue through seven other exercises. Each can be practically addressed alongside the other. However, the order proposed in this paper provides some escalation. So there you are with flight sessions full of diversity.

Once you've mastered those exercises, it is time to finalize your learning by completing landings.

To enhance your flights, you can also start development exercises.

After you pass 10 landings at less than 10 m from a target during a session, you can be considered autonomous. But it is recommended to achieve this independence step by passing first exams proposed by your national modelers association. The program is simple. There are regular meetings held in your region, and the fact that you are


Exercises progression
The basis
Basis reenforcement
Vers l' Autonomie
Go straight
8 turn
360 turn
Explore terrain
Flight slowly
Take off
Fast flight
Stalling
Fly back
Landing
10 landing in less than 10m
Autonomy
Improvement
Improvement
First lift
Inverted flight
Looping
Circling
Roll
Take 2 consecutive lift
Slide 2

Slide 3

able to fly in another site and have the slight pressure of such an examination helps to demonstrate that you've mastered your plane.

Refer to Slide 2 (previous page)

The basis

Go straight

The first exercise is to go straight. For this you will need to go and return from your left to your right and vice-versa, perpendicular to the wind. Initially, the turn-around phase will be conducted by the tutor.

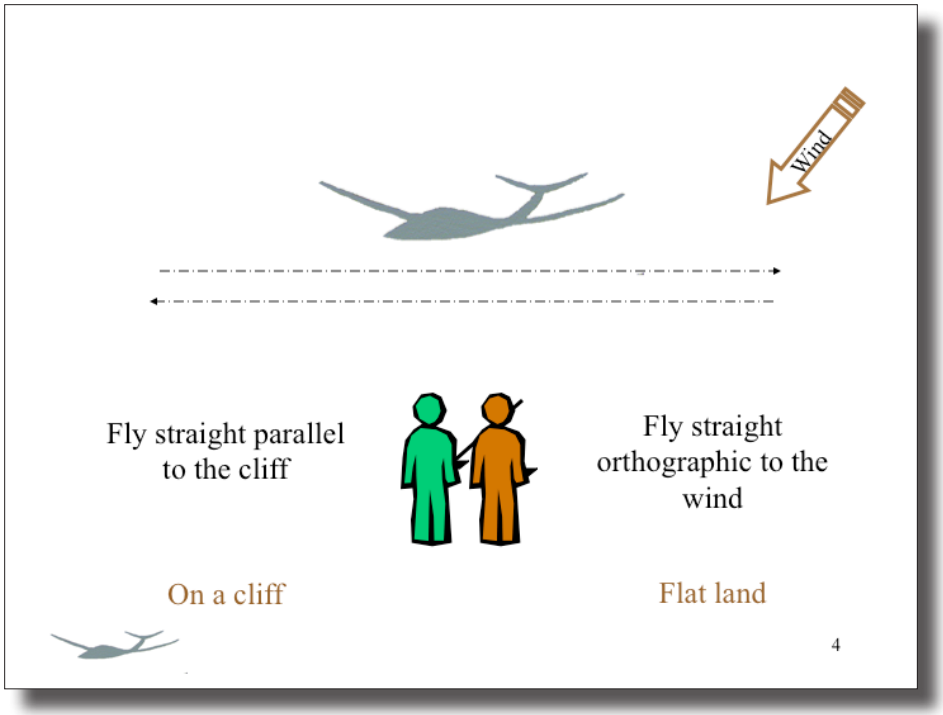
This may sound simple, but it is actually a fairly complex exercise. You should indeed watch your speed, the inclination of the wings and control your model. It pitches or it goes up? Make the correction. It switches to the right? Try to go left.

The first flights will last only three to five minutes each. Beyond that chances are you will be completely lost - you will over-ride or react too late.

Refer to Slide 3

Pilot and copilot in a flying session. Being an instructor is not just for old chaps. Between the young, this goes so well!

This first exercise is done to teach you how and when to make corrections to have a constant speed during flight. It will also force you to master the tracking



Slide 4

of the model by requiring you to go from point A to point B.

Refer to Slide 4

Prepare the plane

Teacher will take the aircraft to altitude and place the plane to one side of the field facing the wind in a stabilized position. You will then have to go to the other side of the field in a straight line and at constant speed.

Flying straight

- At his signal, you will travel in a straight line across the field:
- Keeping on track
  - o by holding the wings flat
  - o by keeping the speed constant
  - o and avoiding the glider passing over you.

You will have to give small orders on elevator and aileron sticks to counter any air turbulence. You will quickly find that you do too much, too late.

A model is generally better flying without you. Let do it gently and do not bring pulse corrections. This will not make any corrections and will serve to only loose altitude.

In other words, your first step will look like a roller coaster or a succession of twists!

And you will quickly understand the added value of a dual radio controlled system.

And that's why tutoring is also of some interest.

Slowly by slowly your tutor will have to leave you alone, trying to recover and get the control back at the very end on your own. This is an interesting exercise!

First turns

After this first exercise, you can run your first U-turn and again cross in front of you.

Turn always facing into the wind. You are going to make some "8's" in the air.

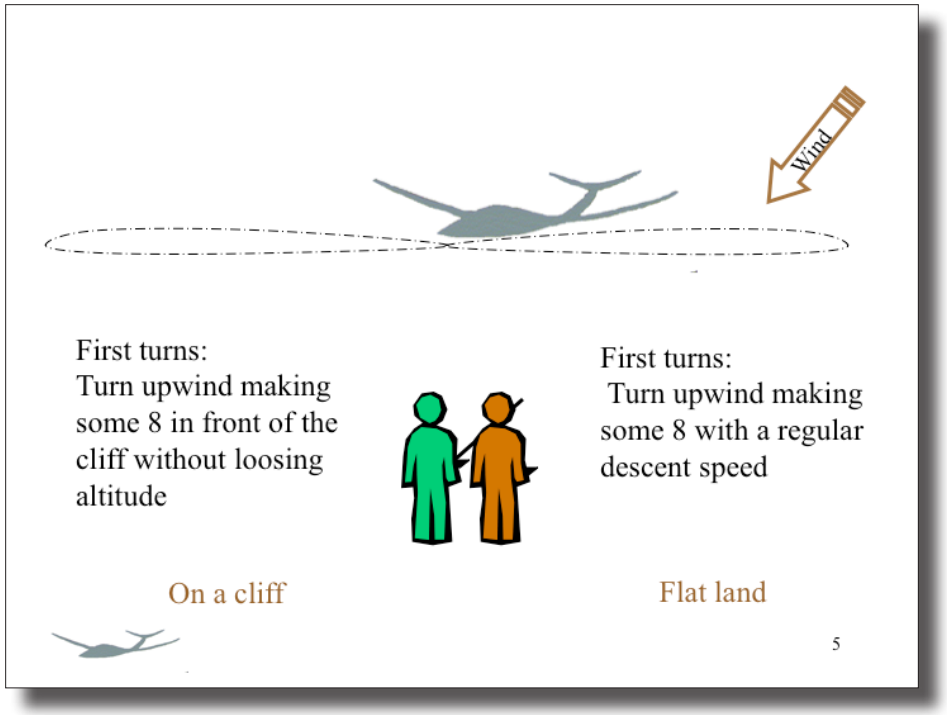
This exercise will be repeated as many times as necessary until you start to understand things.

"Turn right (or left) and go straight" are the basics of flight. Gradually, you will limit your commands, anticipating turbulence. In short, you will start to be "one" with your machine.

Refer to Slide 5 (next page)

Starting the U-turn

Gradually move the aileron and rudder sticks to shift the direction by tilting the model at 20° (turns facing the wind).



Slide 5

Controlling the U-turn

When this inclination is reached put the aileron stick at neutral position (the direction remains changing) and control the plane pitch by a command to pull up on the elevator stick in order to keep the same speed. Look at your speed and keep it constant. To do so, look at the fuselage. It must remain horizontal.

Exit the U-turn

To exit the U turn, put the elevator stick in neutral and act on the ailerons in the opposite direction until the wings are back to horizontal. It is even necessary in some cases to pitch down a little bit to restore some speed.

A turn is properly executed if you leave in the right direction with the same speed as at the beginning.

The stories of loss of altitude will come later. For now just think “regular speed” and drive the model where you want and not where it wants.

Basis reinforcement

Make a 360

No, this is not a figure coming from the Kama-Sutra. It’s just a description of a full turn.

Until now, you have only turned facing the wind, never back to the wind. By going downwind, your model must have the accurate speed. The risk of stall is important. So we have to now learn to fly downwind during the turn. The consequences of these changes in ground speed also affect the action on the sticks; the model will react a bit different.

Refer to Slide 6 (next page)

Starting the turn

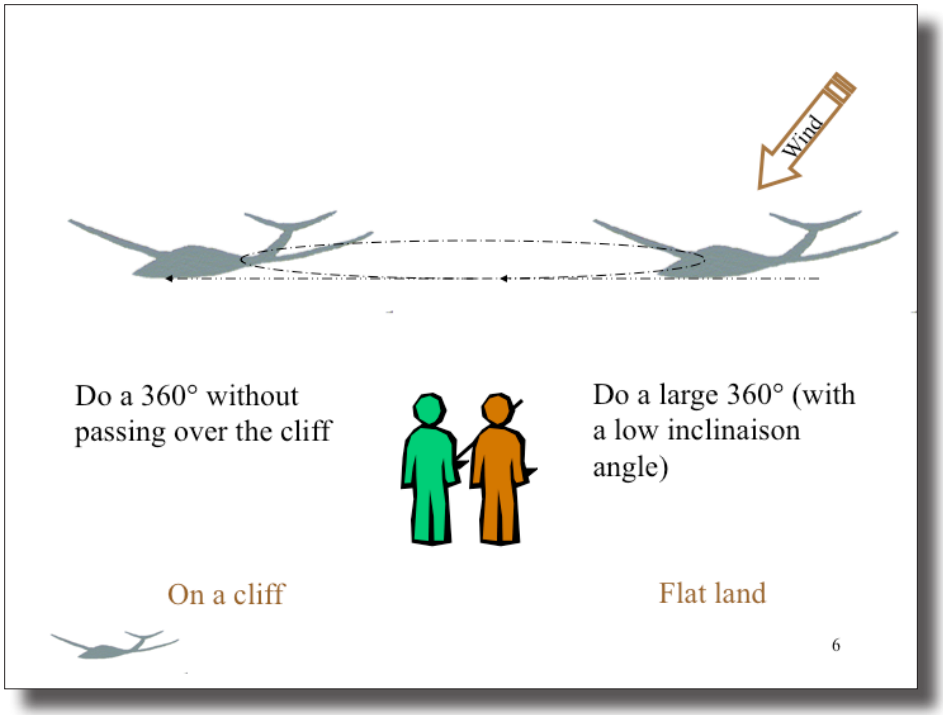
Setting is as in the previous exercise:

- By stabilizing the glider on all axes
- By moving the rolling and yawing (in the same direction) sticks slowly to tilt 20° max of inclination (same as turning upwind).

Controlling the turn

Control the turn:

- By maintaining the speed (fuselage in horizontal position) with a slight nose-up order to keep the same glide path. Note: You will have to increase the pitch up command with higher wing inclinations.
- By adjusting the ailerons during the turn to keep a constant inclination. Sometimes ailerons are “against” (especially downwind). By “against” we mean in the opposite direction to the turn. For example, the plane turns “right,” but your ailerons are at “left” position and the model remains tilted



Slide 6

in your “right” turn. During all the turn, the direction must remain “right.” When the glider will return facing the wind, the ailerons will be neutral and sometime again back to increase the turn. In short, you must constantly adjust the various levels. This is what we call “three axes” control.

This exercise is the epitome of gliding. To be sure, you will have to continue to develop your circling ability even after you are autonomous.

An alternative is to start by turning the downwind leg first. To be done only when you start to master the 360 turn starting into the wind. You will need to initiate the turn with the more speed and pay attention to the downwind distance the model will travel. Even if you think that the model is quite far away, it will be soon close to you. The risk that the model passes over you or even worse that it passes behind you, is clear.

Exit the turn

The exit of the turn is very classic. It is obtained by countering aileron (plus rudder) until the wing is back to horizontal and with the elevator stick back neutral.

Learn how to fly fast

Up to now, you’ve been flying at constant speed. So now, take some speed and repeat the previous 360° turn or the “8” turn exercises.

You’re not going to be immediately a good F3F or F3B flyer, but this exercise is a good introduction to these types of flight. It’s then up to you to continue such exercise once when you fly alone.

Refer to Slide 7 (next page)

Prepare the plane

You must pick up speed:

- The glider is put crosswind with horizontal flight.
- Do a few clicks to the elevator “trim” setup in order to gain speed.

Do the turn

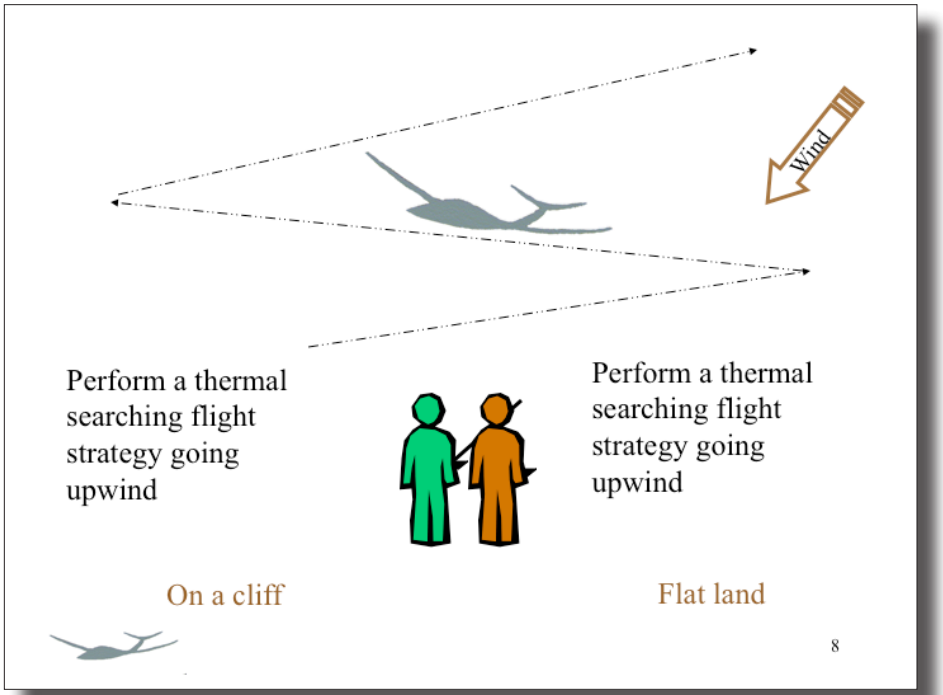
Turning is achieved:

- by stabilizing the glider on all axes.
- by moving the aileron stick slowly to tilt 45° to 60° plain bank to turn upwind. At high speed, it may be possible to turn without yawing action.

Once the bank is obtained finalize the turn by:

- bringing the ailerons to neutral
- pulling the elevator stick. It might be possible that you go to full movement.

In a turn at high speed always decouple the action of the ailerons and the one



Slide 7

Perform a thermal searching flight

Strategy going upwind

Glider flying is all about finding and exploiting thermals. To find them, it's easy. Just go over areas that are in favor of their release. So you need your model to go over the countryside to search for thermals just like a wanderer for mushrooms picking.

We will therefore implement the exercises already carried out in the form of variants: Rake the ground in front of you with large "zigzag" going upwind.

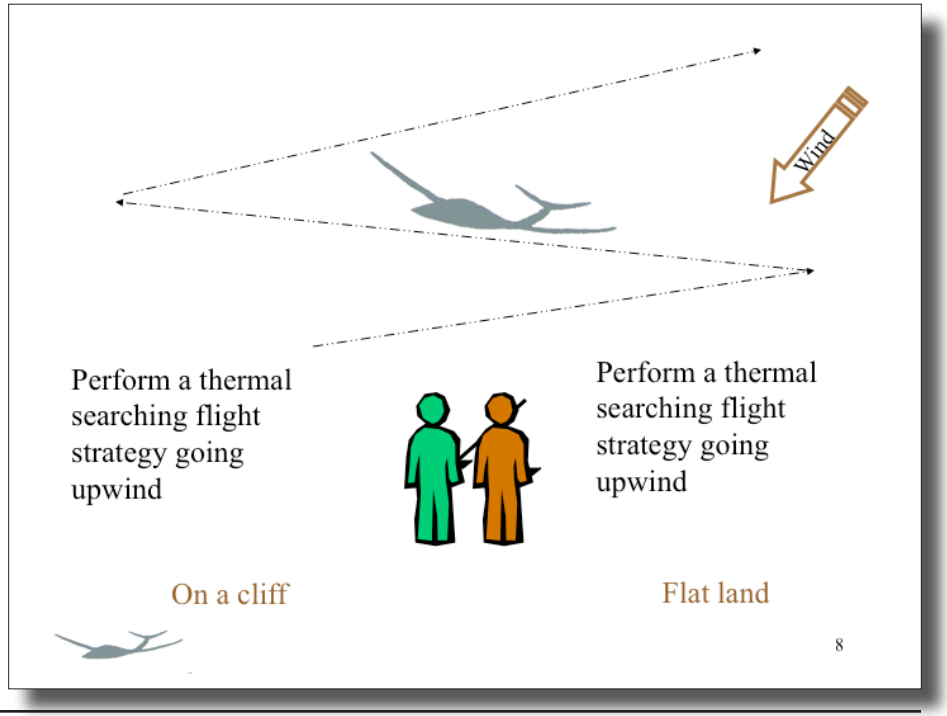
This exercise will mix straight lines, speed control, turn into the wind and detection of lift and sink. For now, there

on the elevator. If you leave the ailerons on when you pitch up, the model will point the nose in the air by the effect of adverse yaw. Your speed will be broken, and you will have to pitch at the end of the turn to recover speed.

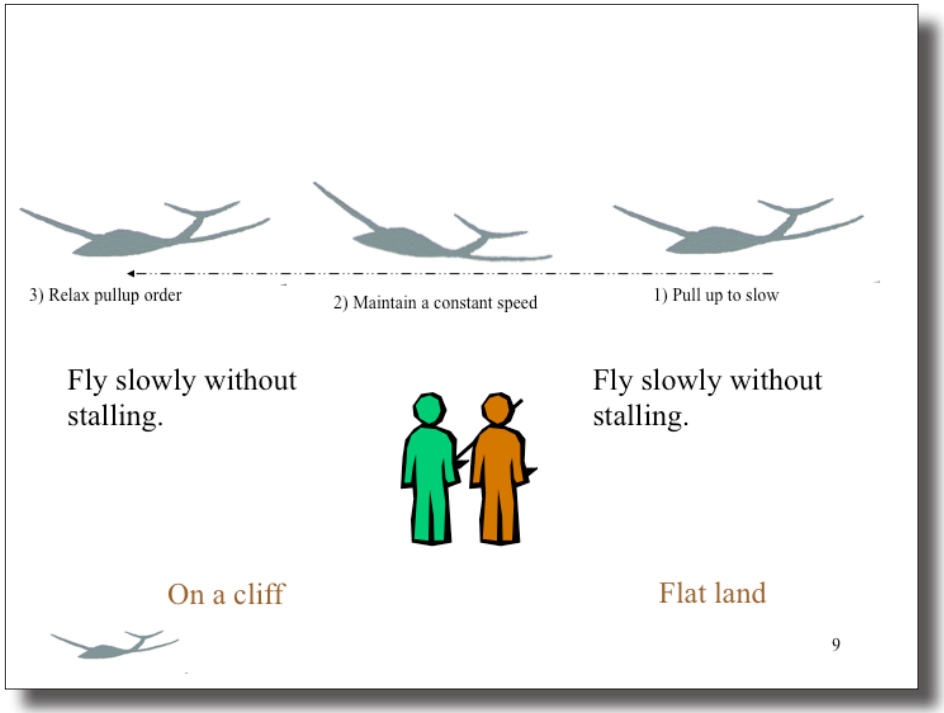
Turn exit

The turn exit is very classic:

• by moving the elevator stick back to the neutral position when the plane flies back 90° from the wind direction. Then put the plane horizontal with the ailerons (always decouple the two steps).



Slide 8



Slide 9

is no question of thermal catching, but only to feel them.

Refer to Slide 8 (previous page)

Prepare the plane

By setting it to fly at its best gliding ratio. Compared to the low speed flight it is necessary to trim with a few clicks of elevator.

Fly the plane

Fly with large zigzags upwind.

Do not hesitate to go ahead. The return to the landing area is facilitated by the wind.

Note: Flying downwind, the return would be much more difficult or impossible given your level of control at this point. That's why until your complete autonomy, you will never fly downwind much, except to land.

Always assess the plane's position above the ground and detect the lifting area and of course the sinking areas.

Fly slowly

Up to now now, you have been avoiding flying too slowly and of course trying not to stall.

You're ready to take some more risks and flirt with the stall but without ever reaching it.

You are going to make a series of phases of long straight flights with slow flight speed portion.

Do this exercise at the same time you learn to master the stall. (See next exercise.)

Refer to Slide 9

Prepare the plane

Reach secured altitude

Put the plane horizontal and at normal speed

Fly slowly with glider

By gradually pulling the elevator stick. Never go to the stall. Your tutor will tell you when to stop.

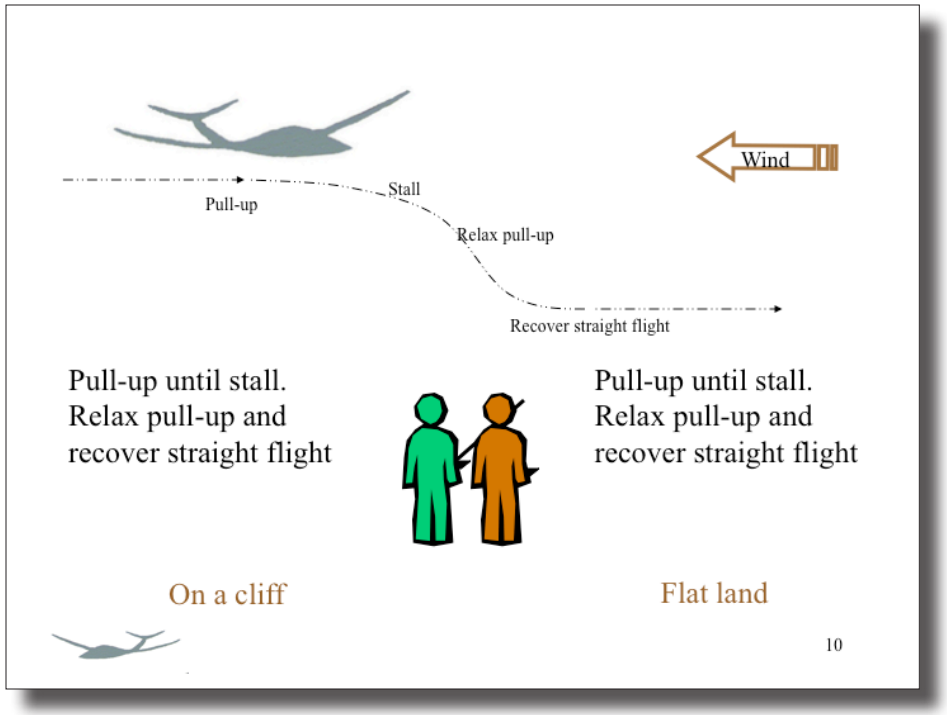
By keeping a constant speed for several seconds with the wings remaining horizontal.

Once the "slow" speed is found, repeat the exercise by playing with the pitching trim in order to keep that speed for a longer period.

Alternate "fast" speed and "slow" speed by playing with the pitching trim.

Learn how to provoke and master a stall

The first aerobatic maneuver you will do is the stall.



Slide 10

This maneuver will at first be done involuntarily. You will be surprised and totally disoriented. Many of us have also lost a model after an early stall which has been badly managed. Fortunately, your tutor will be there to recover the model before it crashes. Sometimes it will be "warm" enough, but that's what makes the charm of being a tutor.

You must understand what is happening and learn good responses to cope. The best way to stop being afraid of a danger is to face it with full knowledge of causes, and then to control it. So let's go!

Refer to Slide 10

Prepare the plane

First of all, put the plane in good conditions, ie:

- by gaining a safe altitude. It is better to have "water under the keel." Rise by about 100 m.
- by positioning the glider straight upwind. Thus, the drop will be softer and the spin that will ensue will be better oriented and easier to manage.

Stall in glider

Stalling is a lack of speed. The airflow can no longer develop enough lift.

To make a beautiful stall, simply:

- Fly the wings flat.
- Pull the pitching stick slowly until you get a complete plane swing or a wing swing. This is the stall.

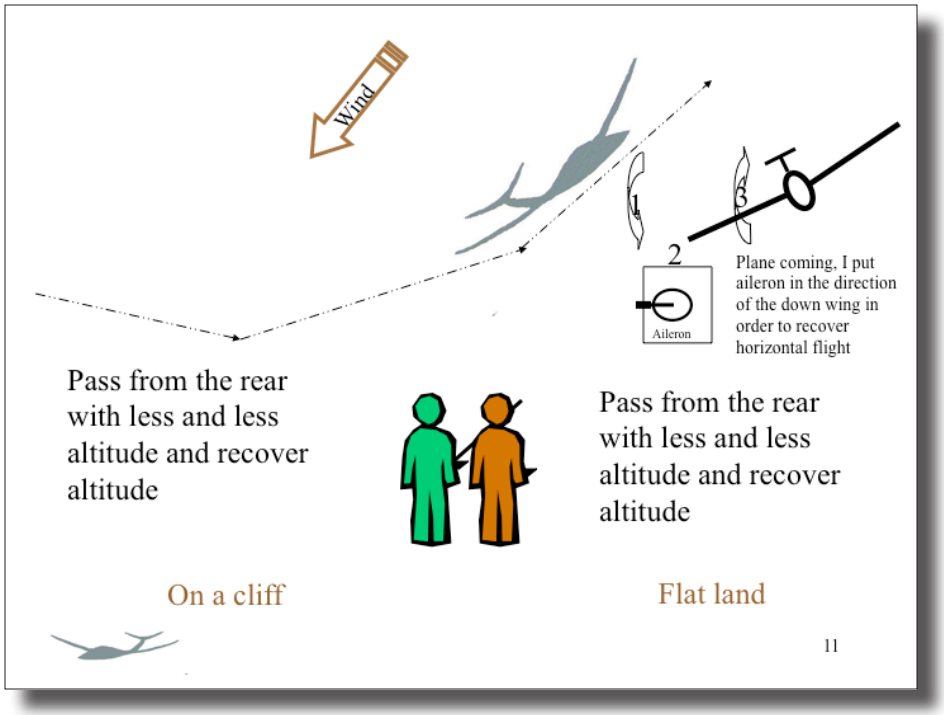
If you insist, the stall will continue for a real spin with a high sink rate and the plane may become "upside down, round and round..." Make your experience! Your tutor is there to save you. Take advantage of this!

Simple, no?

Knowing how to perform and manage a spin can save your model some day.

Note that the spin is often the only effective way to exit and come back down in high lift, especially if your plane is not an F3X type (all composite, with airbrakes...). Even standard air brakes may sometimes not be efficient enough. In this case, do not push the stick as this will give you more speed. Quickly (in two or three seconds) this will become an over speed resulting in wing breakage or the loss of a wing by fluttering or both. In all cases, this is the death of the model.

Instead of that, put the sticks in the corners by yawing to one side and pulling on the elevator. And wait. The glider goes into a spin. If nothing happens put in a little bit of aileron. Here, it can only go in a spin. Wait, and wait again, and again, and again, until the glider has found a less stratospheric altitude.



Slide 11

I once flew for more than a minute before leaving the thermal. This made a lot of turns! But the model was intact (it was a light TD glider).

Any model, even the lightest, supports the spin. Remember this and apply it when you will fly in “panic” mode, the model size becoming a small point in the sky.

Exit stall

Well, if you can do a spin, we must now cope.

To do this, simply do the opposite of what brought you in this situation:

• Release then the elevator stick. For a glider a little more “vicious” or if you are at a low altitude, push on this stick for a while.

• When the speed has increased, you can then take control back and do what you have to do. Turn in the opposite direction of the spin with rudder and when the turn begins to slow (but not before), you can pull up and recover a correct flight line.

If you are at low altitude, you must have a good self-control to push, turn the other way and wait to recover. But if you pitch up too early, you may go into a spin in the opposite direction...

If you have an engine in the nose (not in the back), you can gradually increase throttle. This speeds up the model. If the engine is behind the center of gravity, certainly do not increase the engine power but reduce it. Applying power in this case will certainly increase the spin speed and prevent successful recovery. On a “duck” type motor-glider (canard), I’ve even seen the spin become completely a unrecoverable flat spin with the engine put at full throttle. Its remains laid in peace!

You would normally require between one and two turns to recover and thus require between 10 to 20 meters altitude. It all depends on your model, its mass and its inertia. Take a little bit of altitude the first time!

Please repeat this exercise with all your models. First, going upwind, and then in all other flying configurations, but always with the required altitude. You need to learn to get out of “trouble” safely.

Flying back

Now you begin to learn how to fly. But there is a flying attitude that you are not familiar with yet. This is when you fly back. This configuration is typical when landing and this is therefore a preparatory exercise.

If you are not familiar with this exercise, it is useless to try to land. You will go to disaster half the time! So train yourself until everything is becoming a second nature.

Refer to Slide 11(previous page)

Prepare the plane

At first get to altitude.

Let go a bit downwind. Caution with the wind speed. Do not go too far away “behind you” in case of strong winds.

Flying back

To succeed with such a flight, try to keep the wings horizontal and maintain speed. When a wing drops (e.g. the one at your left), act to the aileron stick in the same direction (left in our example).

When the plane is facing the pilot always tilt in the direction of the lower wing to recover.

It is not very intuitive at first. So force yourself. After a few exercises you will fly as if you were in the machine.

But in this case, accomplish the task without questions asked. When flying back, to right, I put the aileron control in the direction of the lower wing.

Another characteristic of the flying back configuration is a certain loss of speed reference.

If you can see the underside of the fuselage and the plane has still speed (it still comes toward you), this means that the plane will pass over you. Go to your side, never above. It is difficult to fly when the plane is over your head.

If you can see the top of the fuselage, this means that the plane will land in front of you.

But any time, you will lose sense of speed. So be careful not to pull on the stick but to push on it in order to always keep the speed. Put two more clicks of down elevator trim and just think of flying flat through aileron action. If it goes down, let it go.

Well, if everything goes well you and your tutor have managed to come back to you several times.

Repeat the exercise in trying to predict the landing point or the altitude when passing along. Thus, you can gradually decrease the altitude, which is a very good start for a future landing.

Learn how to takeoff

You are now almost a regular flyer. You and your tutor form a nice pair and you begin to master the model. Of course, you still mix-up regularly and your guardian still has work to do. Anyway, you start to master the plane.

It is time for you to take off the model.

Refer to Slide 12 (next page)

Prepare the plane

Take the model behind the center of gravity. The model must take a nosedive direction. If it remains horizontal or if the tail tends to fall, your handling is not good. No need to remind you of the danger of a propeller if there is one, given the number of times you fly dual. But, a little reminder is never too much!

Hold the plane over your head. The antenna of your radio is oriented to the side, as usual. It is therefore unlikely to be struck. I remind you that the model must naturally have a slight tendency to dive.

For this first start, the tutor will be at the sticks. If a motor glider, the engine is started.

Takeoff in glider or motor-glider

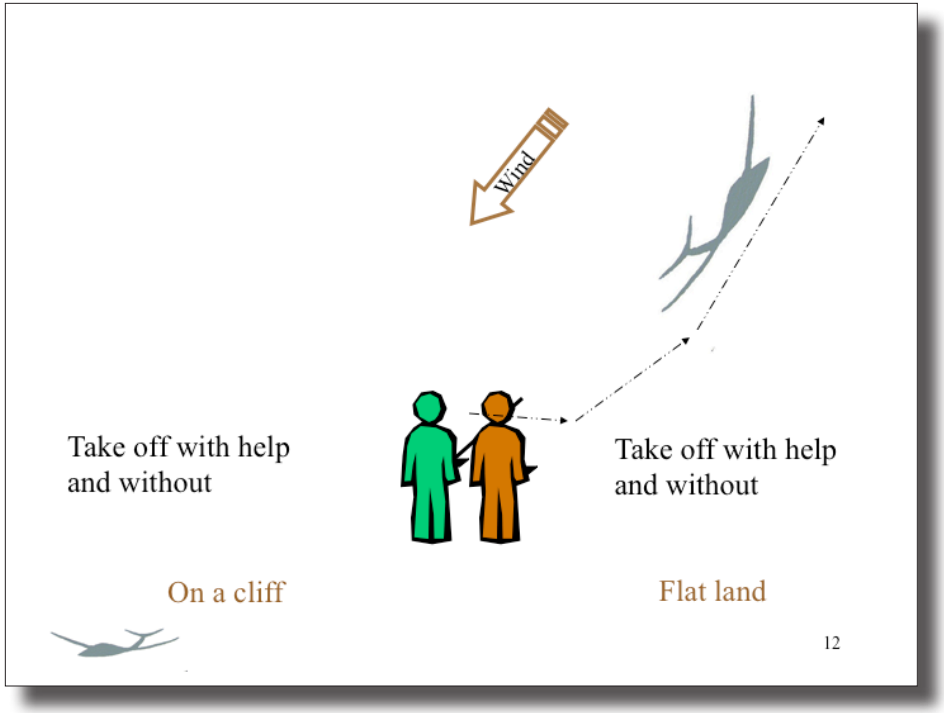
Throw vigorously the glider slightly down (never up). In general, with a beginner’s model, there is no need to run.

Let it pick up speed before you nose up the model.

Fly in order to maintain the speed identical as to a normal flight. Often, this requires a down elevator command on the stick. The plane will then reach altitude safely.

Do not try to climb too quickly. This will lead to the opposite effect: glider stalling or hanging on its propeller, unstable in all axes, and gaining little altitude.

In short, fly as usual.



Slide 12

Gradually take control during takeoff, with the launch performed by a third party or possibly by your tutor. Only much later, when you will be confident, you can launch and fly at the same time. In any case, there is no shame in getting help for a take-off; quite the contrary. It is even a sign of confidence that you give to someone to do so.

Reaching Autonomy

Landing

You've almost arrived at the end of your learning. You better know how that works. You are no more surprised flying back to you. You even take a few thermals on occasion. Your tutor becomes more and more quiet. He even begins to teach you the arcane of the air mass... It's time to move on to the hardest thing: The landing at the desired location.

Going back on the earth is easy. But having the same number of successful landings as takeoffs (for real aviation this is what qualifies any good living pilot) is a bit more difficult.

While you're still in the air, everything is "nominal" and as someone said, like falling from a building, "so far so good!" But as we approach the ground, many obstacles (trees, fences, grass...) begin to cross the airfield and prevent you from doing your "kiss landing"!

You will now need to gather all your experience gained during the various exercises performed:

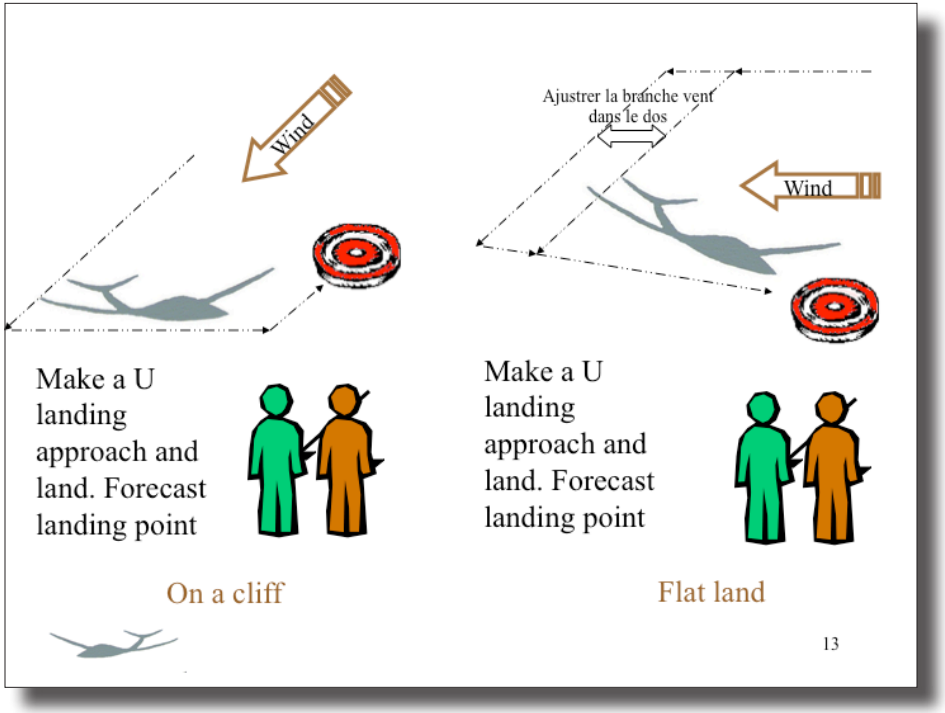
- Master of a straight line
- Control turns downwind and upwind
- Master of flight at constant speed
- Flying back to you
- Assessment of the impact point
- And so on.

Refer to Slide 13 (next page)

Prepare the plane

A good landing is easier to execute if the model is initially in a normal position. So, let's put the model flat and at constant speed. We will assume that you are facing the wind and the model is "upwind." If this is not the case (model downwind), get some altitude and return upwind with an altitude margin. So, the glider is "upwind" in steady flight position. You can now begin.

Put in three clicks of down trim to improve the plane maneuverability on all axes. Turbulence is always higher near the ground. A good landing speed is always faster than the "slow flight." Do not land at a speed close to the stalling speed. There is danger.



Slide 13

To land the glider

A standard landing approach is when the plane describes a “U” pattern. Sloping, this may be a simple “L” branch without much downwind flight. Look at the complete figure.

Start the U upwind with altitude reserve. This branch “downwind” has to be adjusted depending on the wind force and the remaining altitude. If you are low and it is a windy day, this downwind flight will be very short. Do not go too far away downwind. This is particularly the case all the time in slope soaring. Your tutor is fortunately there to show you.

So anticipate this branch length in order to reach the landing point precisely at the end. Of course, it is better to be too high and too close to you than the contrary. So always put a safety margin with a too short downwind leg and therefore the model being too high.

Turn 90 degrees perpendicular in order to prepare the last turn and be aligned with the landing runway. This is the second part of the “U.” This branch is the last opportunity to adjust both airspeed and altitude. Make sure the model is flying “tail high” and not “tail down” and anticipate the “impact” end point.

If the altitude is still too important, continue, pass the runway alignment and turn away against the wind (180° turn). So do “S” flight staying at the runway entry with a sequence of turns into the wind until the plane reaches the good altitude. The “S” does not mean that the plane will get closer to you. Stay just over the runway entrance.

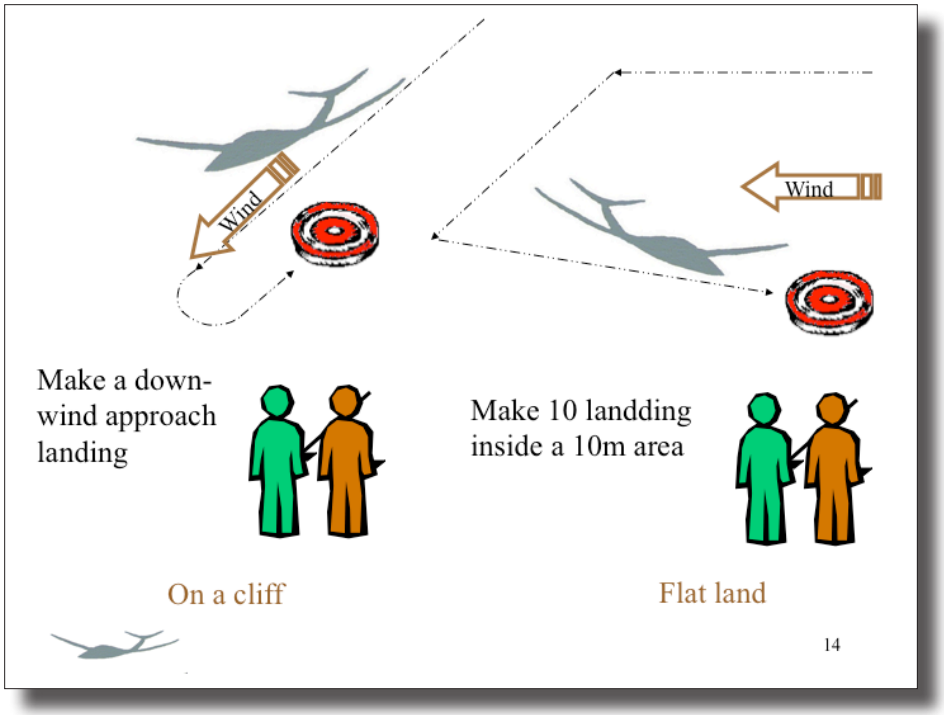
Finally, when the altitude is correct, make the final turn into the wind to be aligned with the runway. This is the last branch of the “U.”

Keep the wings level with small and rapid ailerons commands; never great amplitudes except in emergency.

Maintain the glide slope, and especially do not slow down. Remember that the plane is going upwind facing you. This creates perception distortion on the gliding slope and on speed. So watch the fuselage (tail high). If you see the fuselage bottom “mayday, mayday.” Pitch down. You must see the top of the fuselage.

At 50 cm, about 18", altitude, and not before, pull slowly on the elevator stick to round. The glider should not regain altitude. (If it does, it means you have been too sudden with your command. If this happens, immediately release the order and adjust the order to pitching to avoid a stall.)

If all went well, the model lands in front of you.



Slide 14

If you have been too long, the aircraft will have landed behind you. Avoid this because you do not know exactly what's going on behind you. And you may misjudge the runway alignment... So a good landing is a landing in front of you.

A small trick: To make sure you land safely in front of you, still see the top of the fuselage in the last branch of the U. If you see the bottom this means that it is flying too slow (low tail) and / or that it will land behind you (too high).

Improve landing

Because you succeed one time to land the plane safely does not mean that you will succeed every time. So do sessions of short flights and landing:

- Takeoff
- One to two minutes of free flight, just to lose runway alignment
- Land.

To make things more difficult, put a spot on the runway a few yards in front of you and make sure that the glider stops within 10 m of the mark.

When you successfully land close to the spot 10 times in a row, this means that you can hit the target as expected. You're ready or close to being independent. Fly on your own.

And feel free to return for more training especially with your next new model.

On the slope, there is another alternative to landing:

Start with the downwind approach at quiet "high speed." Still take care of stalling. The plane is a few meters over the horizon. Then just over the landing point (at 2 m altitude), make a 180° turn (at a high bank angle), pitch and land. Quiet impressive the first time. So try it when you still know how to land in a more classic way.

This exercise, if you succeed - with precision landings within 10 meters of the spot - reinforce your ability to fly autonomously.

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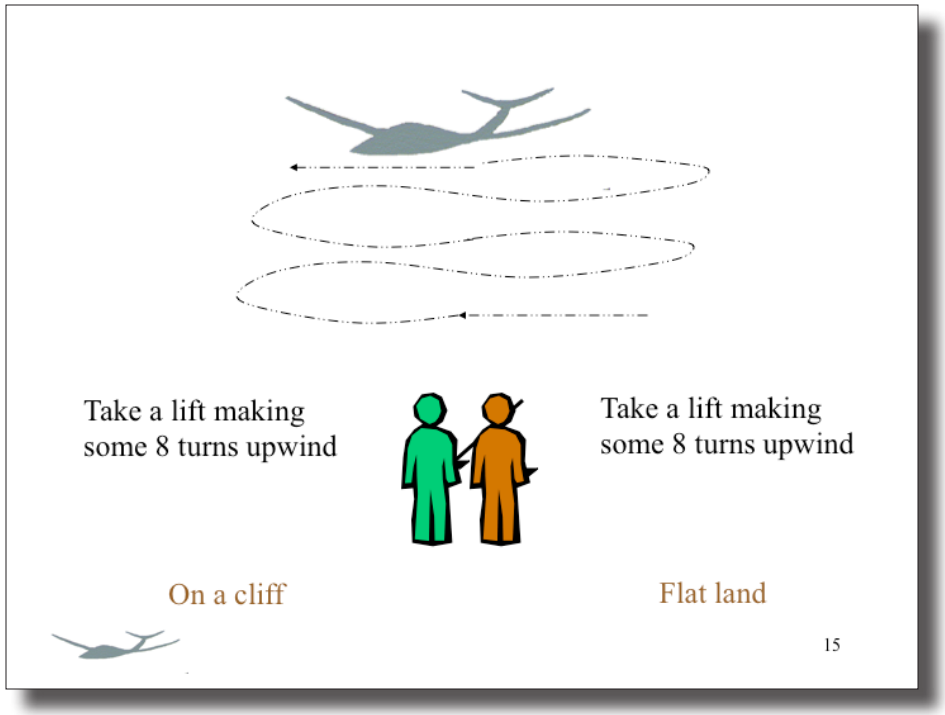
Improvement

When you begin to know a few things, you can enhance your exercises with a few "sweets." This will provide you the opportunities to discover new horizons. And this will also provide your tutor with little work since he begins to find the time a bit too long making only small corrections! In short, do it if you want to!

Take a first thermal

One of the objectives of the flight is to take a lift in a thermal to gain altitude. What could be more exciting than to



Slide 15

here too, well this is the end. Oh! It has moved a bit downwind...

Refer to Slide 15

Prepare the plane

The plane has a constant speed in a straight trajectory.

First flight in a thermal.

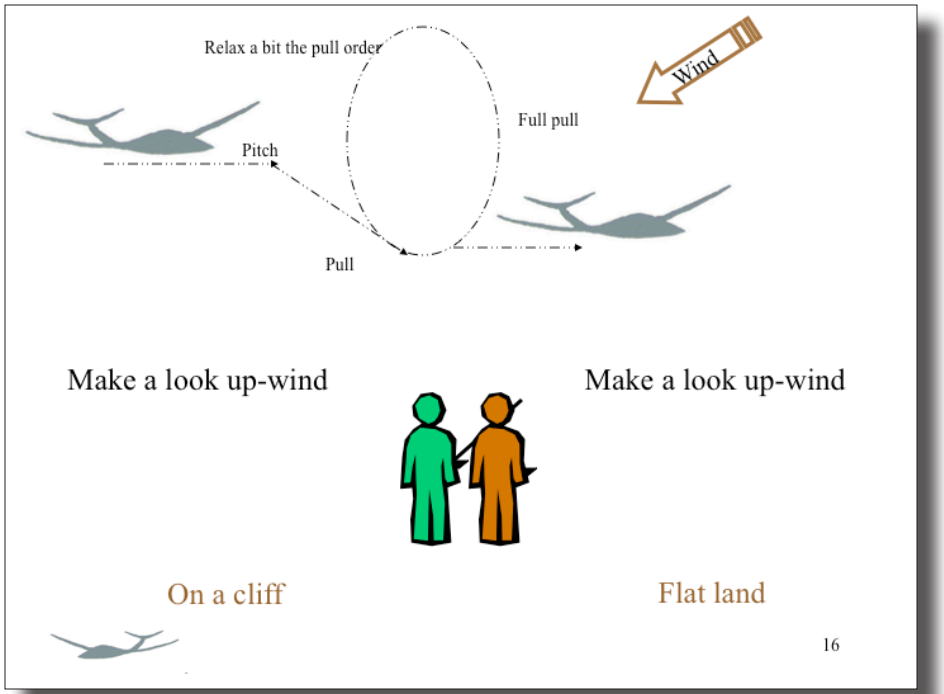
If the glider nose rises, push on the pitching stick to recover the flight line. You enter the lift. If the model accelerates and gains altitude, becoming tail high, pull up to recover your original speed. You are in the lift.

When the plane starts to get out of the lift (less altitude gain speed), make a 180°

reach the top thanks to your own ability and air mass science knowledge!

The first time will of course be quite fortuitous. But it's not because the plane "fell" into a big fat one that you should not try to exploit it.

At this stage of flying expertise, a spiral - a succession of 360° turns - will potentially not be well controlled and will not allow proper altitude gain. But your experience in "upwind turn" is quite a great support. Do not hesitate! Pass and pass again through the lift. Take the straight flight leg portion to mentally visualize the core of the lift: Here it goes,



Slide 16

turn (always turn upwind) and cross again the lift.

If the glider has a wing that rises suddenly (e.g. the left wing), then you're on the side of a thermal only one wing may be inside. Counter with the ailerons and turn 90 ° (to left in our example). The lift is then normally straight ahead.

Looping

The first real aerobatic maneuvers you can try is, without doubt, the loop. There is no danger to perform it and it always appears impressive the first time.

Refer to Slide 16 (previous page)

Prepare the plane

The glider is facing the wind in steady flight position. Do not try to start the maneuver if the wings are not in a horizontal position. You will not obtain a nice figure.

The loop

Push frankly on the elevator stick. Wait for a "small" second so that the plane gets speed. The model begins to describe the first quadrant.

Pull gradually the pitching stick starting at the bottom of the loop, continue to pull.

At the top of the loop, the glider is on the back. Then relax a bit the action on the pitching stick in order to describe the last half of a circle. The plane is back upwind.

Making a very round looping is an art. Not enough speed at the start, and the model will stall prior the top of the loop. The plane will then make a sort of "comma", not a loop.

The roll

The roll is the second aerobatic figure after the loop that can be achieved. If you do not care too much about aesthetics, it's pretty easy to do it.

Refer to Slide 17

Prepare the plane

Get in horizontal flight, wings flat and going upwind at high speed.

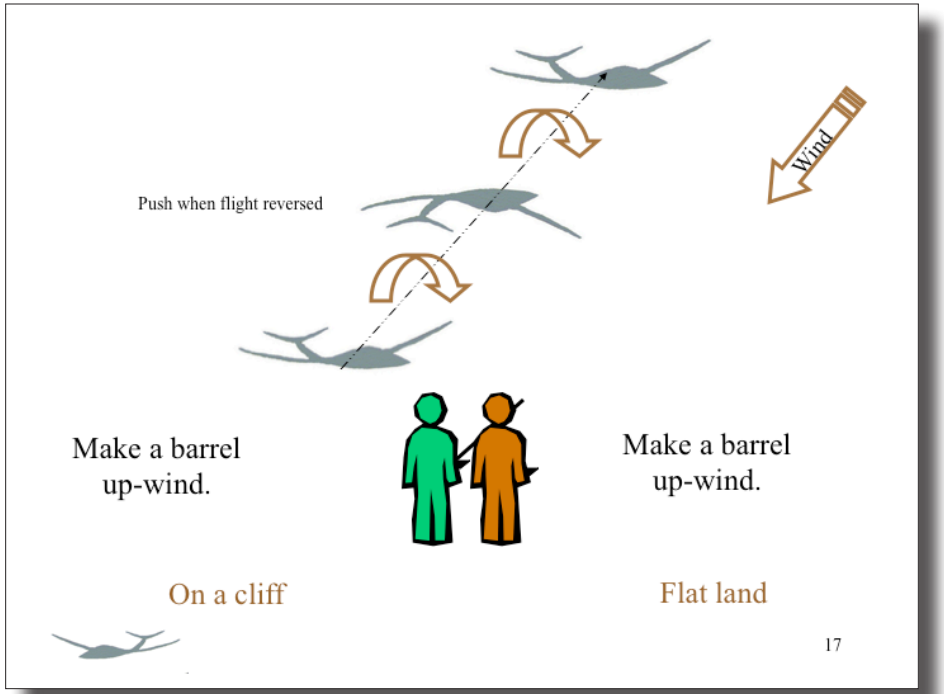
The roll

Put the aileron stick to one side.

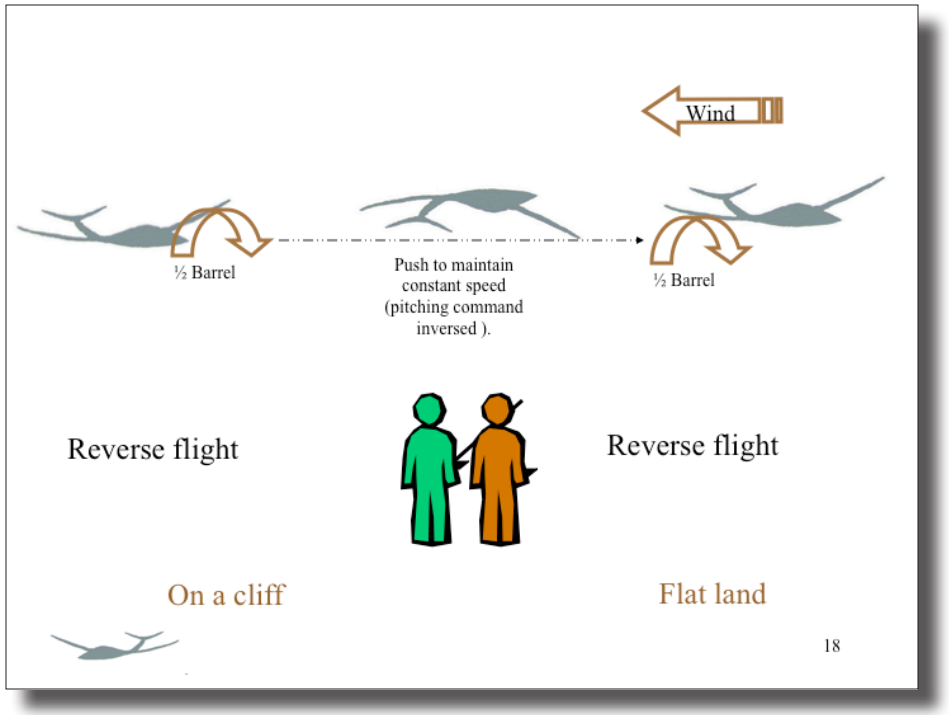
Gradually, as the glider passes onto its back (inverted flight), push the elevator stick to keep the flight line horizontal. The determination of this action depends upon each glider. This can require from little stick action to full stick. For the first model type, it is generally necessary to frankly push on the pitching stick.

Release the pitching action when the glider executes the second half of the figure.

Note: A little action on the yaw stick when the wing is "vertical" may also be required to have a nice roll: Action to



Slide 17



Slide 18

be done in the same direction as that of the turn. But if you have enough speed and if the ailerons do not have too much deflection, the yaw action may not be necessary.

Note: If the rotation of the glider is not on a line but like a “barrel,” it may be due to inaccurate aileron deflection (too much). Reduce the deflection range and try again. It is likely that it will get better. You have just discovered that it is useless, perhaps even harmful, to have too much aileron deflection. Outside of a certain range they bring only trouble.

To set the aileron of a glider, the “roll test” is useful!

Inverted flight

The inverted flight is the third possible maneuver that can be learned. It is recommended to still master the looping, and also the roll, before attempting it.

But hey, your tutor is next to you! So why not try it!

Putting the plane “on its back” and maintaining this position is a rather difficult exercise. When one wants to go up, he must push instead of pull. In short, it’s the world upside down. And when the earth is near, it is likely that you will have forgotten everything...

For all of these reasons and others, it is recommended to practice inverted flight regularly and to make turns and spirals in such a position...

Refer to Slide 18

Prepare the plane

Put the plane upwind in horizontal position with some speed.

Fly inverted

Do half a roll.

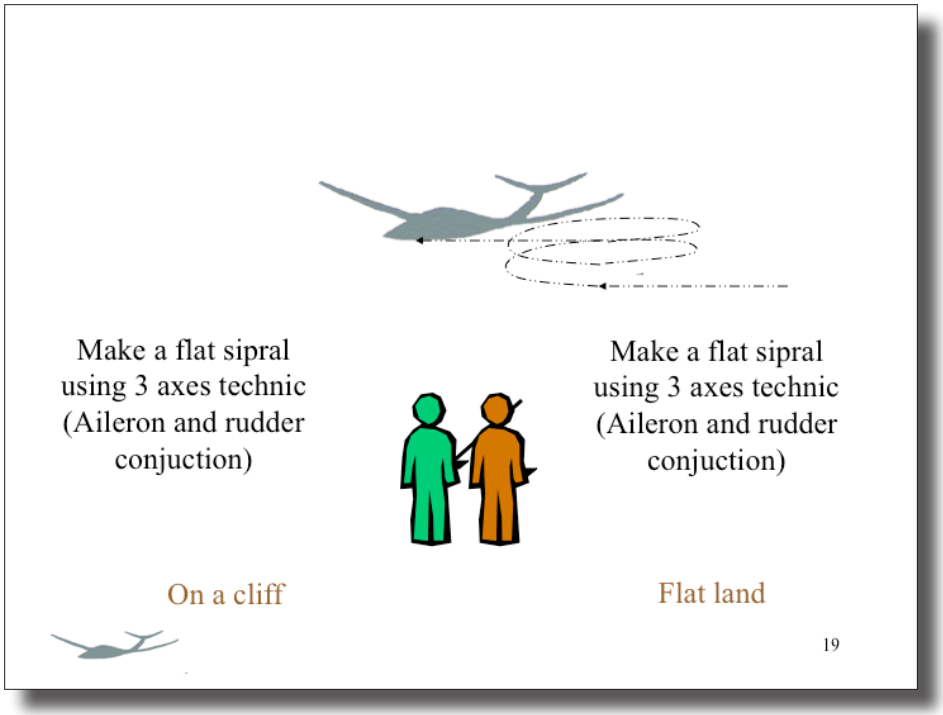
Plane inverted, push the elevator stick to keep the flight line.

Inverted, the rate of fall is greater than in normal flight. So do not try to get the same angle of descent. Look at the speed and maintain it.

To exit this inverted position, release the pushing command and do a half roll after taking over the speed, then push again to recover horizontal position and flight line.

Note: Do not exit through a half loop. You are potentially too close to the ground and the plane will exit downwind.

When you are somewhat familiar with this posture, make it crosswind. Then try to make a 180 ° turn upwind. And complicate the game with a full circle... Your tutor is here to recover!



Slide 19

Circling

One of the hardest figures to be executed correctly is nice circling in a thermal, well centered, very regular, and that ends when the model is a single point in the sky... The quintessence of gliding!

The spiral, however, is a succession of 360° turns. But it is this succession that is most difficult. Especially since at the entry of the lift you do not know its shape nor its precise position. Is it large or small, far left or far right, how is it moving? You're going to have to describe more or less regular 360° turns in order to better focus.

But if you make a driving mistake, you may misinterpret the movement of the model. Everything must be done carefully, with sensitivity and sensuality...

As the plane can stay about 10 to 15 minutes in the thermal when there is wind - after it has either disappeared or was shifted too far downwind - you will have to be able find it ASAP but also be enduring. Even just five minutes of spirals appears to be a long time.

Refer to Slide 19

Prepare the plane

The plane enters the lift. Up to now, it is a piece of cake.

Circling

Start circling with aileron and yawing action in the same direction.

The bank angle is now obtained; put the ailerons in neutral and keep the yaw in the direction of the turn.

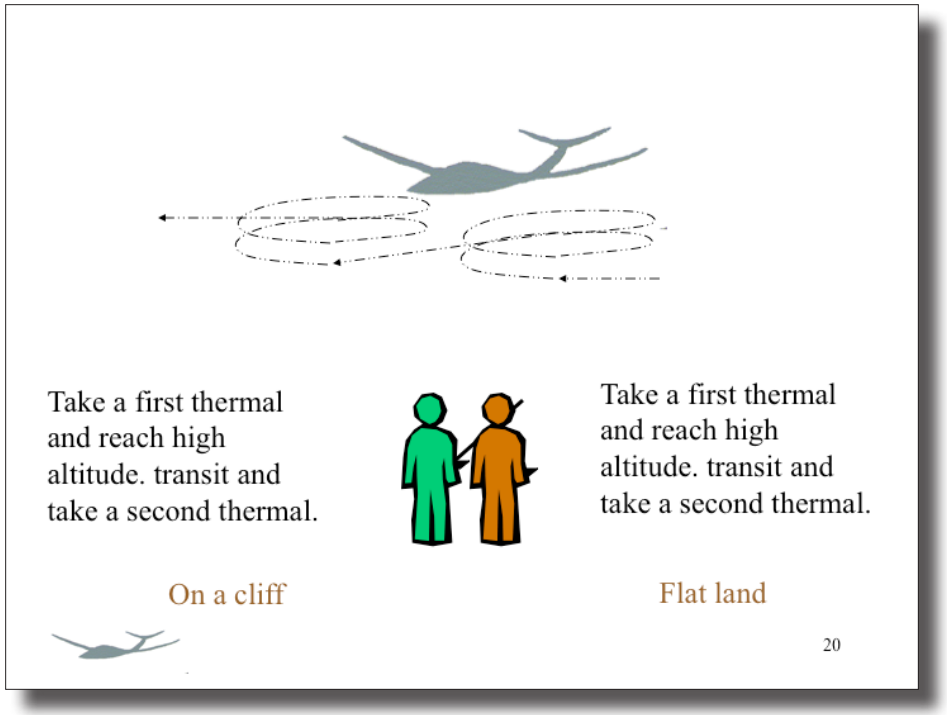
Adjust the circle diameter with pitch (pulling action on elevator) to keep a constant line of flight without accelerating or slowing down.

Adjust the ailerons to keep a constant bank inclination:

- In general, going downwind, aileron may be against (opposite direction to turn),
- They are generally in the direction of the turn when the plane goes upwind. You must restart the turn.

Also adjust the direction to keep an adequate turning radius.

The secret of good circling comes from the minimum commands you will make in both number and in amplitude. Too much and you no longer will have a good reading of the air mass. In addition, no action also means no aerodynamic disturbance. The model thus flies optimally.



Slide 20

Take several thermals in the same flight

One of the ultimate flight goals is to find and take advantage of multiple thermals in the same flight.

This means several things:

• You know how to find them. And remember that when you leave a thermal it is usually far downwind. The plane must then return upwind which easily leads to an altitude loss of 100 to 200 m. You must then find another thermal. You have then little time for searching. This is where your knowledge to read the field must be expressed.

• You know how to circle. To take from 10 to 15 minutes in a thermal is quite challenging. Especially since in general it ends at the limit of visibility. Finally, we must return. But even then you can not relax at all. You must find another thermal. And when you find it - sometimes at the second or third possible location you expected - you are not entitled to be cool. You must still give the best of yourself to circle again as the plane is now at low altitude.

• You know endurance. Circling is now a second nature. You decrypt the slightest sign that affects your model. And you have perfect self-control despite the successive phases of tension. And you love to do it.

Two times a quarter of an hour in a thermal plus the transition phases plus return and landing means that you can expect more than a half hour under tension. Flying a complete hour without any engine, especially in the case of a motor-glider, quickly becomes a target.

In short, now that you've done this task, you are a good glider pilot!

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Conclusion

Getting autonomy does not mean that the young pilot knows everything. This is quite the contrary. It is just a start for adventures.

First, because the pilot no longer has some guidance or protection that will allow anticipating errors.

Second, modeling is not only piloting. It also includes those aspects that go from the small tricks of how to repair an issue, to the design, to the construction. As in real aviation, and as with any motorsport, servicing and maintenance are essential. For the model, maintenance is realized by the modeler. It is therefore essential to incorporate this aspect during the lessons.

The first model will suffer greatly. Therefore it has to be robust, easy to repair. The new pilot must accept

in advance the idea of a “limited” lifetime. Let us leave aside the beautiful models with landing gears, spoilers or flaps, and a beautiful decoration. That’s for later, in a year, when progress will be made. It’s like driving. Never take a new car when you just get your license! Just continue to dream for a while.

Gliding is not limited to finding and exploiting lift. Flying for exactly 10 minutes and landing closer than one meter from a spot is also of great interest. It’s a whole program and it gives you time to discuss with others in the field.

If you try, there is a good chance that you will love it. And if that does not bite you, you can also make scale models, try aerotowing or true orthodox aerobatics, speed, etc.

It’s up to you to discover them. And do not hesitate to make additional flights with a tutor or to become a tutor yourself.

Everything is fun!

In a future issue of *RCSD*

Gino Alongi’s Bergfalke II Freestyle

A 1:4 semi-scale model of the circa 1955 full size glider designed with AutoCAD, Profili2, and XFLR5 and built using laser-cut parts. Features include RDS aileron control, Oratex covering, removable stabilizer and pre-tensioned hooks for mounting of the wings. Capable of aerotow and slope flight.

Full size plans for the Bergfalke II Freestyle will be available (downloadable PDFs), along with detailed instructions in English and Italian which include approximately 300 photos illustrating the construction process.


Carlo Simeoni's
1:2 Bowlus Super Albatross
N 33658
N 33658

Translation by Ferdinando Galè

FOREWORD

Hawley Bowlus, born in Illinois in 1896, became soon a flight fan. At 14 he won a kite competition in Los Angeles. Soon after he started his career by building a single place glider, as well as models based on the basic design of the Wright brothers.

After WW I (1914-1918), he was impressed by the German sailplanes he had seen in France and UK, and decided to organize his company, the Bowlus Sailplane Company. In addition to the construction of airplanes, the company ran flight training at various airfields around the United States. Charles Lindbergh and his wife were among Bowlus' pupils.

Confronted with the problem of building a well flying sailplane, Bowlus decided to take selected parts from two other sailplanes he had already built: the Albatross (18,9 meter wing span) and the Baby Albatross. From the former he took the outer panel of the wing; from the latter he derived the ovoidal shape of the fuselage and the vertical empennage.

The resulting Super Albatross sported the all moving tailplane and the large landing flaps of the Baby Albatross. Another Baby Albatross, with elliptic tailplane, was built by Howard Kelzey, but without landing flaps.

Bowlus, who died in 1967, is rightly considered a pioneer of American aviation.

Carlo Simeoni is a seasoned builder, hailing out of Trento (Northern Italy). His sons Luca and Matteo have greatly helped Carlo in realizing this scale model, a true masterpiece in its class.

****

The design of this scale reproduction was started in Spring 2003, upon suggestion by Sergio Mantovani, a dear friend of mine. At that time he was completing the construction of a 1:4 scale replica of the Harbinger sailpane. This was his last model; Sergio died one month after the trial flight.

The book Segelflugzeuge 1920-1945 by Martin Simons exhibits a 3-view sketch, from which I derived files to be used with an electronic design program (Auto CAD): thanks to this electronic marvel, this project slowly started to shape up.

A 1:2 scale ratio was selected, in order to make something which had never been done before neither by Sergio, nor by other members of our model club Gruppo Aeromodellistico Trentino.

My intention was to realize a replica of the Super Albatross, as done by the American John Sinclair in the '90s of the last century. His model sported a white fuselage, while wing and empennages were covered with Solartex Antik tissue. Birch plywood had been used for the structures.

Pictures and other information were taken from the magazine *West Wind*, April 2000 issue. Care has been taken during the design step, in order to easily load the components into my station wagon.

The original Goettingen 549 airfoil, set at 4,5° incidence, has been selected for the wing.

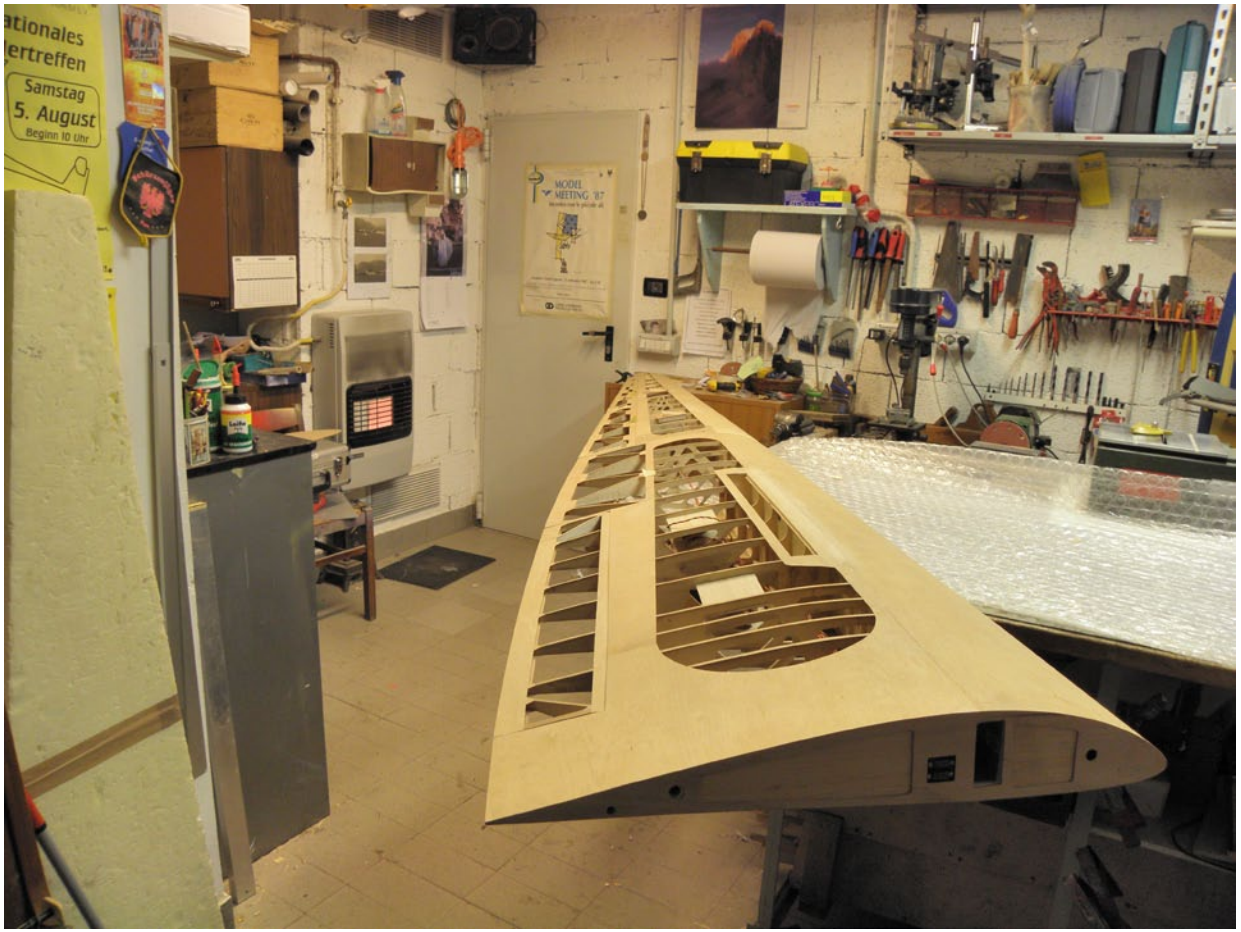
A linear twist ends at the tip with –4,5° and the Goettingen 617 airfoil.

This choice I have arrived at, according to my experience and to suggestions taken from various publications. The well known Duranti program Profili has been used for the definition of the ribs. The root rib resulted to be 68,5 centimeters long, thus ensuring a large Reynolds number, not too far from that of "full size" sailplanes.

Quite an encouragement was obtained by studying some books by Ferdinando Galè: L'Effetto Scala ed i Modelli Volanti (The scale effect and the flying models), Aerodynamic Design of Radioguided Sailplanes, and Structural Dimensioning of Radioguided Aeromodels. The last two have been published in USA by B^2Streamlines.

Both birch and poplar plywoods have been used to cut wing ribs and fuselage formers by means of a CNC cutting

Noerdlingen 2 June 2011



The extra-large wing in the construction lab.

machine. This has been designed and built by Horst Niederwanger, a club mate of mine.

Spars have been realized with several layers of 2 mm pine wood; the number of layers is decreasing towards the wing tip. The overall height is 9,5 cm; the box spar is completed with poplar plywood. The flexural resistance of both the spars and the joining bayonets has been verified according to the standard rules.

The wing has been assembled onto an expanded polystyrene tray, while the fuselage has been constructed onto a marble plate, which ensures an excellent precision.

The tail boom is made with an Ergal alloy tube. Although its diameter is a few millimeters smaller than the true scale aluminum tube I had initially selected, it is 50% lighter.

This minimal deviation from the true scale principle is just a minimum toll to be paid for sake of weight saving.

The fuselage is sheeted with balsa, then covered with 160 g/m2 fiberglass tissue.

The wing is covered with 0,4 mm birch plywood by means of a hot pressing iron.

Once a thin layer of glue has been applied to the structure and to the plywood covering piece, I wait for about 30 minutes before joining the two elements. Once the plywood is positioned, it is pressed with with the pressing iron, set at average temperature

Carlo Simeoni with sons Matteo (at left) and Luca (far right) at Noerdlingen Germany after the first flight, 2 June 2011.

and protected by a rag. Gluing is thus rapidly completed. In case of misfit, the plywood can be detached again by applying some heating. Of course this procedure must be first tested on scrap pieces.

Karl Eberhartd, a German friend of mine, belonging to the MFG club (Noerdlingen), was quite instrumental as far as the cockpit cowling is concerned. He addressed me to Herr Ulmer, who is a professional artisan of medical pieces, as well as a keen model builder. He gave me practical suggestions and produced several formed pieces for me. He produces plenty of pieces for major European firms of medical pieces. He did show his collection of over 1000 templates in order to explain to me why he could not keep also my 35 kg template.

Due to the large size of the model, all incidences and settings were controlled in the large laboratory of Horst Niederwanger, a club member of mine, before the finishing operation.

Two Multiplex receivers, RX-12-DR and RX-9-DR are interconnected with an adequate cable, in order to use four antennas. Also, a GPS device has been installed. A total of 13 Hitec 645 analog servos are used. By means of V and Y-type electronic cables made by SM Modelbau, a maximum of five servos with different settings can be connected to a single channel. The whole system

Noerdlingen 2 June 2011; Danilo Boselli (see text), Matteo and Luca Simeoni after the first flight.

includes a PowerBox System BaseLog, powered by two LiPo batteries (8,40 V, 2800 mAh).

Before the test flight, the position of the center of gravity was calculated by means of the Crocco method and a simple computer program. Both systems gave similar results, requiring a 400 gram ballast.

The test flight took place on June 02 2011 at Nördlingen, Bayern, Germany, after having fulfilled all the safety requirements requested by Werner Leidel, security officer on duty that day. These included servo excursions, center of gravity location, and radio guidance range. Danilo Boselli, a friend of mine, and my sons Luca and Matteo have been quite instrumental in this respect.

At the take off, there was a light wind, at about 30 degree from the runway centerline, but without any problem. Climbing was easy, without need of touching the trims.

At about 350 meter the release was soft, while the RC Piper tow model went quietly to land.

After ten minutes of flight, I succeeded in landing the sailplane, in spite of strong side winds.

Also my sons succeeded in piloting the Super Albatross, without any problem.

In subsequent flights, several performance data were recorded, with help of the GPS, namely:

Super Albatross landing at the Cremona (Italy) Vintage RC Sailplanes Meeting (25 September 2011).

Thermal speed	55 to 60 Km/h
Dive speed	100 Km/h (with an elegant overhead loop)
Stalling speed	35 to 40 Km/h
Landing speed	45 to to Km/h

Relevant videos can be found on he following web sites:

<http://www.youtube.com/watch?v=51HPXzAl_9o>

<http://www.youtube.com/watch?v=USuAhSog67E>

All in all, the Super Albatross has been defined “a very slow model.”

By the same token, I am extremely satisfied with this modeling experience, the most demanding in my aeromodelling career. It took over 3000 hours in study, design and construction. My thanks go to friends and my family, particularly to my wife Gemma, for her continuous encouragement.

Carlo Simeoni, Trento Italy
Gruppo Aeromodellistico Trentino, Trento Italy

SPECIFICATIONS

	“Full size”	Model
Wing span, b	13,20 m	6,60 m
Wing area, S	11,61 m^2	2,50 m^2
Length, L	5,76 m	2,88 m
Weight, W	292.500 g	24.800 g
Wing loading, W/S	25.200 g/dm2	9.920 g/dm2
Scale ratio		1:2

ANNOUNCING

The FFA *DIAMANT* Archive

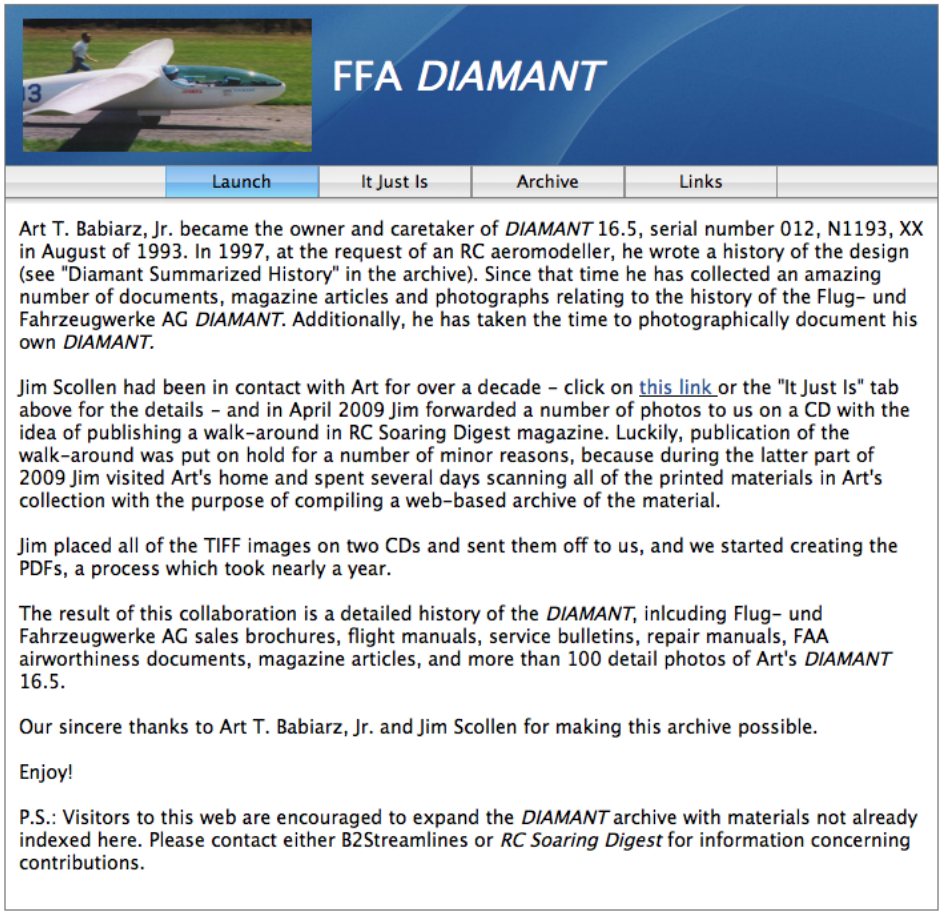
<http://www.b2streamlines.com/FFADiamant/>

RC Soaring Digest/B2Streamlines is pleased to be able to make available the DIAMANT Archive containing materials belonging to Art T. Babiarz, Jr., owner and caretaker of Flug- und Fahrzeugwerke AG DIAMANT 16.5, serial number 012, N1193, XX.

Art's collection of documents and photographs was scanned over a period of days by Jim Scollen and forwarded to *RCSD* for translation into a series of PDF documents. In all, the archive took nearly two years to assemble and be made available on-line.

This archive includes various materials created by Art; a Senior Project by Art's son, Jason; DIAMANT sales brochures and advertising; FFA and FAA legal documents; performance information; and three photo albums and collections which document N1193 specifically. A number of magazine articles and similar materials round out the archive.

This vast amount of material is more than likely the largest collection of DIAMANT information in existence. Still, if those visitors to the web site have materials which seem to be missing from the archive, we would very much appreciate being contacted as relevant additions are always encouraged and welcomed.



Listing of FFA DIAMANT Archive materials

01 Development and History
- Diamant Geneology.pdf
- Diamant Owner List '94.pdf
- Diamant Summarized History.pdf
- Jason's Senior Project.pdf
- SN 012 Traceable History.pdf

02 FFA Diamant Sales Information
- Diamant Sales Brochure 1.pdf
- Diamant Sales Brochure 2.pdf
- Misc Advertising.pdf
- Technical Data, Sales & Dealer Pricing Info.pdf

03 Legal Documents
- FAA Printouts of ADs.pdf
- FAA Type Certification G13EU.pdf
- FFA FV-816 Repair Manual.pdf
- FFA FV-818 Flight and Maintenance Manual.pdf
- FFA List of Factory Service Bulletins.pdf
- First Annual.pdf
- Flight and Maintenance Manual Add.pdf
- Mandatory Repair GFA AD/131 FFA 5.pdf
- Modified Operating Limitations.pdf
- Problems at Home.pdf
- Service Bulletins.pdf
- Spar AD mods.pdf
- Type Certificate.pdf

04 Performance Information
- Performance Information.pdf

05 Diamant Assembly Checklist
- Assembly Checklist.pdf

06 Replacement Canopy
- Replacement Canopy.pdf

07 The Topless Diamant 19
- Topless Diamant 19.pdf

08 Diamant Days by George Moffatt
- Moffatt - Diamant Days.pdf

09 Diamant Photo Journals
- 94-04-27 First Flight.pdf
- Diamant photos 9-25-2009.pdf
- George Moffat, Jr in Diamant 16-5.pdf
- Handle.pdf
- Jan 06 family room winter.pdf
- Pierre in wave.pdf
- Soaring March 1969.pdf

10 30th Anniversary Celebration
- Diamant 30th Birthday.pdf

11 Magazine Articles
- 34th National Soaring Championship 67-09.pdf
- Competition Confidential.pdf
- Control Gap Sealing.pdf
- How to Win by Not Losing by George Moffat.pdf
- Landing a Diamant.pdf
- Misc Magazine Articles.pdf
- One Man's Opinion.pdf
- Soaring 1970 June.pdf
- Two Long Final Glides.pdf

12 Trailer Drawings
- Trailer Drawings.pdf

14 Janes World Sailplanes
- Janes World Sailplanes.pdf

15 Diamant Forum Comments
- Diamant Forum Comments.pdf

20 Sterling Free Flight Model Plans
- Sterling Diamant p1.pdf
- Sterling Diamant p2.pdf

Winged Shadow Systems

The Revised Thermal Scout

By Pete Carr WW3O, wb3bqo@yahoo.com

The theory is that as a pilot ages, he needs to build bigger airplanes so he can still see them. Well, when the planes are too big to fit in his vehicle, the pilot needs to resort to "Plan B." That is where the Thermal Scout comes in.

I'd met Dave of Winged Shadow Systems at last years Toledo Show. It was great fun to discuss the Thermal Scout with Dave since he shares my interest in electronics and telemetry. I had written an article for *RCSD*, published in the March 2011 issue, about the Scout and how I listened to the pulse recurrent frequency and pulse width of the original Scout. Then I'd built a small transmitter operating in the two-meter Amateur Radio band and hooked that up to the Scout. The two units were very small, used the receiver battery for power, and signaled lift quite well.

I explained that, when flying big ships like the Craftaire Sailaire, it was a real task to fly the ship at extreme range and also work lift efficiently. The Sailaire originally carried a Thermic Sniffler that Dr. Walt Good and Don Clark had built and sold to Hams back in the day. A Sailaire didn't need to work very hard to find lift. However, it did need some help to get it back from very high altitude. The stabs were particularly prone to flutter at high speed and the turbulence associated with a fast descent. The Thermic Sniffler was very good at relaying such flutter information to the pilot and alerting him to the problem. I had hoped to have the Scout perform the same way but in a much smaller package.

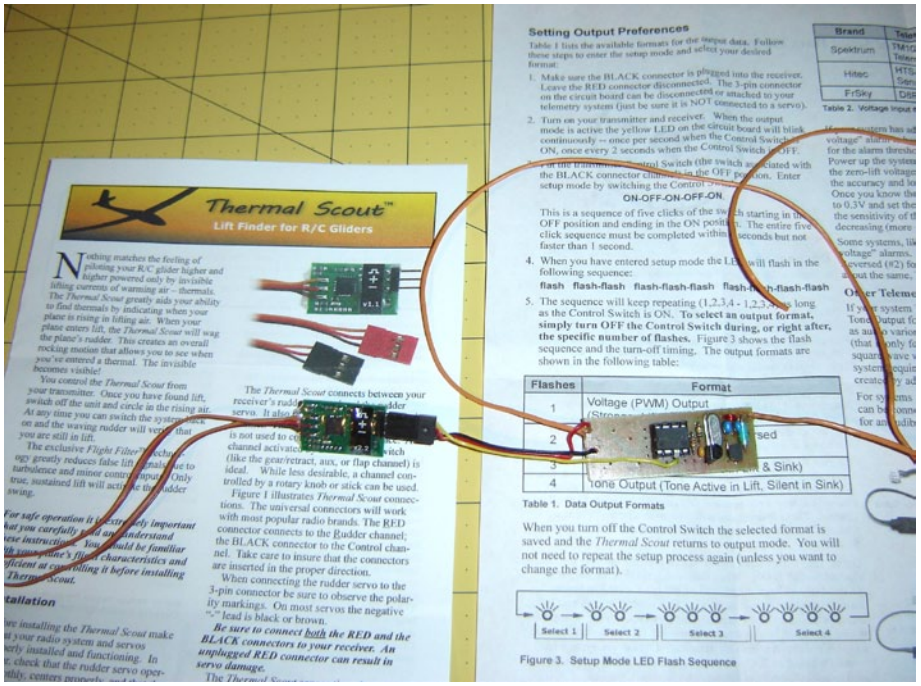
The other problem with the Thermic Sniffler was the 9-volt battery that powered the unit. I'd always forget to turn it off at the end of the day and have to replace the battery at the next flying session.

The Sniffler and battery together made a fairly large package that required careful installation, even in 100+ inch span sailplanes.

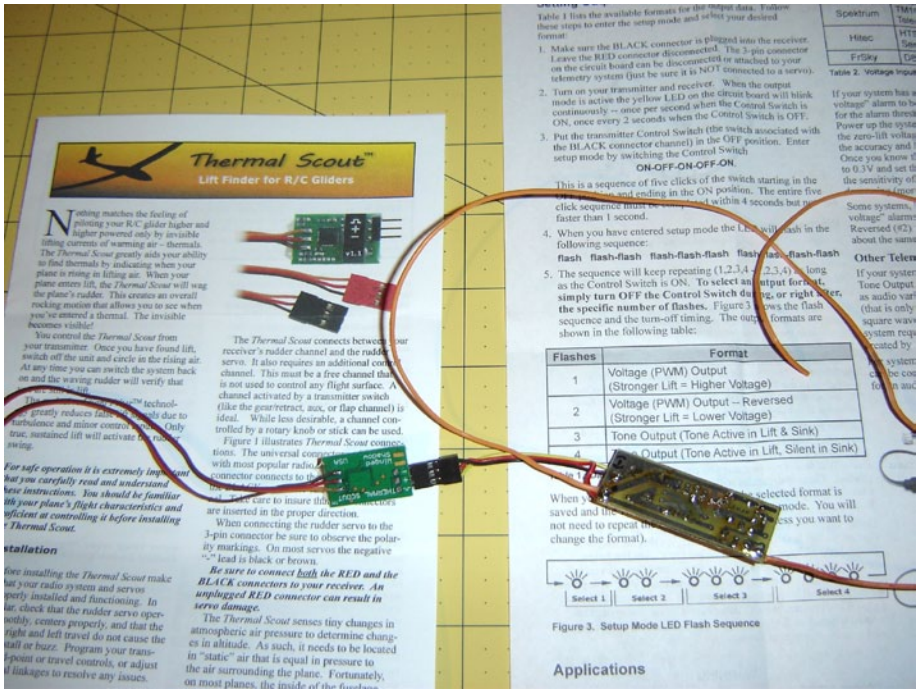
The Scout, on the other hand, is powered by the receiver battery, is switched of and on with the radio, and will fit inside a hand-launch glider.

Dave had sent an e-mail outlining the recent change to tone output for telemetry operation of the Scout. I called him up and got the particulars on its operation. He said that the version 1.2 unit that I had could be upgraded to tone if I'd send it along to him. I did that and received my Scout back in just a few days.

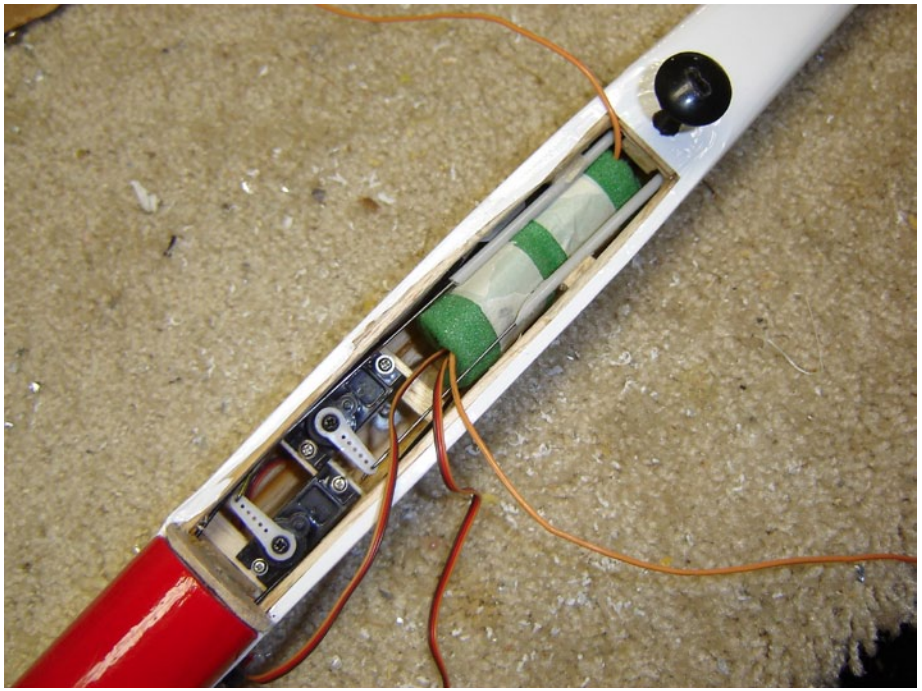
The unit is capable of coupling to some of the newest telemetry systems and various connecting cables can be included at the time of upgrade. There's one for Hitec, Spektrum and FrSky as well as a cable for generic systems.



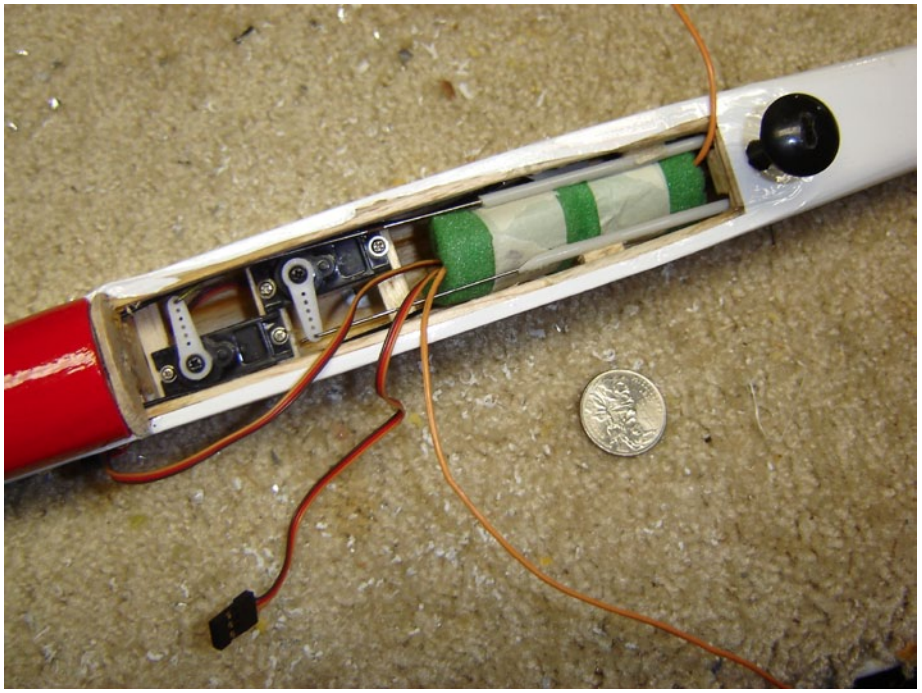
The Thermal Scout and companion transmitter are connected by a 3-pin Futaba type Connector. Power from the battery pack is fed through the Scout to power the transmitter. Simce power is routed through the receiver the Scout and transmitter are shut off when the airborne radio is turned off.



This is the rear side of the Scout and the transmitter. I used a piece of old credit card as a insulator between the two boards and then taped them together. Once they were positioned I added a sheet of foam for shock protection. One cable connects to a switchable channel on the receiver while the two antenna wires are taped to the bottom of the wing.



The two orange wires are the Scout transmitter antennas. They should be taped to the bottom of the wing in a "V" pattern for best reception on the ground.



The Scout and transmitter are wrapped in green foam and stuffed behind the servos. The aircraft is a 1.5 meter Skeeter sailplane. The addition of the Scout did not require the ship to be rebalanced. A quarter lays next to the fuselage for size comparison.

There is also one for tone output, although I plugged the Scout directly into the two-meter transmitter without it.

I had some concerns that the tone modulation might not be correct for the transmitter input. The transmitter is an FM unit that is designed for about 4 to 5 KHz of modulation deviation. The Scout tone output is slightly weak on the deviation level but very easy to hear at the receiver. I just turn the receiver volume up a bit.

Dave and I discussed the lag in tone change with lift. He said that the lag was there to smooth out response and not signal every twitch of the controls. Overly sensitive response tends to indicate false lift or turbulence where the delay gives a more accurate lift indication.

My tests show about one second of delay. That's longer than the old Sniffler but not hard to get used to.

In addition, the tone will peak in frequency and then begin to pulse at about ¼ second intervals when strong lift exceeds the maximum lift tone indication. The reverse isn't true in a dive. The tone frequency decreased to a minimum but doesn't seem to pulse when you really dive the aircraft.

I have several two-meter transceivers with the usual “rubber duck” antenna. The Scout and its transmitter use a “dipole” type antenna of about 18 inches per side. This is shorter than the old Sniffler since the operating frequency of the transmitter is several megahertz higher. The two halves of the dipole are taped to the bottom of the wing in a “V” pattern to minimize null fade off the antenna ends.

The rubber duck antenna and transceiver were able to pick up the Scout signals the whole way around the thermal circle without any sign of signal fade. The range and signal strength are considerably stronger than the old Sniffler.

This type of radio telemetry is great because you watch the sailplane full time while getting updates on what it’s doing.

The new telemetry systems are technically interesting but you need to take your eyes off the ship to see the data screen. It seems that every time I take my eyes off the ship it tends to do something strange and unexpected. The Scout will alert me if something like that happens.

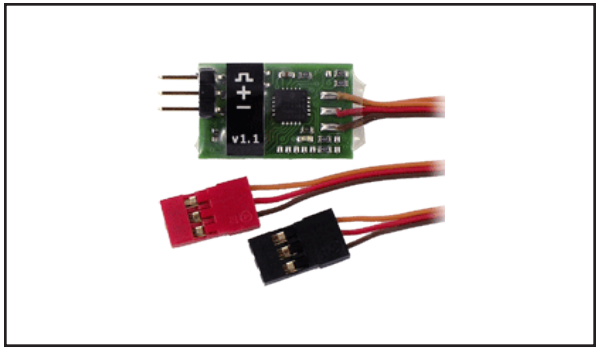
Most guys don’t really need a thermal indicator when their ships are in reasonable range. A well trimmed sailplane will signal lift quite well. It’s out there down wind when chasing that last little bump of lift that the addition of a Scout will really help. The Scouts rate of descent indicator is equally valuable when diving out of the big air.

The transmitter used with my Scout came from a kit that was designed for “Fox” hunting. This is a Ham activity also called a hidden transmitter hunt where the transmitter is hidden and Hams with their portable radios try to locate it.

That’s a whole other kind of fun, but the Fox transmitter works equally as well in a sailplane.

Dave mentioned using an old 72 MHz radio with the Scout. He dismantled the transmitter and took out the RF circuit. This was coupled to the Scout and placed in an aircraft. The companion receiver was hooked up to an earphone so that the pilot could hear the Scout tone. It did require that the pilot place his pin on the club field frequency control board on whatever RC channel he was using for telemetry.

There are also some FM transmitter circuits out there, used as wireless microphones, that operate in the 88 to 108 MHz FM entertainment band. These would also be very easy to modify and use with the Scout. A small FM iPod type receiver and earphone would handle the ground end of the system. The FM wireless mic or 72 MHz radio link would not require a Radio Amateur license like the fox hunt transmitter does.



The Thermal Scout, actual size

The addition of the tone function to the Thermal Scout opens a larger scope of operation for the unit. The small size and the fact that it is powered from the receiver battery makes it useful in a much larger range of model sizes. It will offer the same functions as the old Sniffler but in smaller lighter aircraft for much more fun.

Resources:

Thermal Scout from Winged Shadow Systems <http://wingedshadow.com/thermalscout.html>

Two meter transmitter kit, P/N XFM-1, available from Jerry’s Electronic Plans, Kits, and Curious Things <http://www.jbgizmo.com> .

Academy of Model Aeronautics
5161 East Memorial Drive
Muncie, Indiana 47302
(765) 287-1256 – Voice
(765) 289-4248 – Fax
(765) 286-3303 -- Competitions Fax
www.modelaircraft.org
E-mail: lisaj@modelaircraft.org

OFFICIAL 2013 F3K TEAM SELECTION PROGRAM

January 31, 2012

Qualification

Team selection qualifier contests can be held from June 1st, 2011 through the weekend of June 30th, 2012. For a contest to be a qualifier, it must follow the F3K rules, be an AMA sanctioned contest, and be announced publically (on RCgroups and www.f3k.us) one month prior to the event. Single day events must have at least 5 preliminary rounds. Two day events must have a minimum of 10 preliminary rounds. Only preliminary rounds will be used for the qualification process. Small contests with less than 10 pilots may have two flight groups of less than 5 pilots; otherwise rule 5.7.9.1 should be adhered to. There must be at least 6 contestants for the contest to count as a qualifier. There will be no separation of groups based on skill or age class.

To qualify for the team selection, program participants must place in the top 30% of one two day qualification contest or the top 30% of two one day qualification contests. For example: a two day 6 person contest would qualify the top 2. A two day 60 person contest would qualify the top 18. Juniors are only required to enter the program and participate in a qualification contest to be qualified for the team selection.

Program Entry

Program entries for the 2013 F3K team selection finals will be accepted up to 30 days before the finals. The pilot must be a current AMA member, paid the program entry fee of $20, and have placed in the top 30% of a qualification contest to be qualified to enter the team selection finals.

The finals will be held between July 1, 2012 and December 31, 2012. The finals will occur over a three day period. The site and date will be determined by a vote of the Team Selection Committee (see Team Selection Competition Site Bids). The finals entry fee will be set by the host club and is separate from the program entry fee. The finals entry form must be postmarked no later than 30 days prior to the start of the finals. The start of the finals will begin on the day of check-in or any pre-contest meeting which competitors are required to attend, if held prior to the actual competition date. Refund requests for the finals fee must be submitted in writing to AMA Headquarters, postmarked no later than five business days following the conclusion of the finals. A finalist entrant shall specify his team affiliation. Teams of up to two pilots will be allowed. There will be no fly-offs at the team selection finals. The US team will be selected at the finals where the top three finishers will constitute the team. The fourth place finisher will be the alternate. The contest rules will be in accordance with the FAI sporting code. Protests must be submitted in writing within one hour of an infraction, accompanied by a $20 fee. If the protest is rejected, the fee will be deposited in the F3K team fund. The protest fee shall be returned to the protester if the protest is allowed to stand.

Upon making the 2013 F3K team, it is required to possess an FAI stamp.

Jury

A jury shall be impaneled at the finals to adjudicate disputes and/or protests arising over interpretation or implementation of the Sporting Code or finals contest rules. Authority of the jury is as described in document entitled "World Championship Teams Procedures Governing the Academy's Sponsorship of FAI Teams". There will be no appeal from decisions of the jury.

Team Selection Competition Site Bids

Bids shall be submitted to AMA Headquarters postmarked no later than May 31, 2012. The bid should include:

1. Host club or organization, name, address, and daytime phone number of the contact person;

2. Site location description, date (must be between July 1 and December 31, 2012), expected weather conditions, local accommodations, approximate cost, and distance to site;

3. Officials other than jury, especially the name of the contest director;

4. Additional equipment or personnel assistance;

5. Local help, assistance, cooperation;

6. Estimated budget.

Any club officer, club member, or team selection competition official may be designated to receive correspondence or inquiries, however the individual should be an open AMA member approved by the organizer. The contest director must be named; it is recognized that organizers may have several possible choices for CD and may present more than one name. Probationary or new CD's are not permitted to serve as a team selection competition CD. The contest director is subject to final approval by AMA and the Team Selection Committee. Other officials (timers, judges, event directors, etc.) must be AMA members and have demonstrated competence within their assigned duties.

Scorecards will be provided by the contest organizer and must be initialed by the timer and the pilot to confirm that the recorded score is correct. The organizers will post printed scores within one hour of the completion of a round to enable the competitors to verify their scores are correct.

Receipts must accompany requests for reimbursement from the team fund. Allowable expenses from the team fund include items such as port-a-john rental, minimum travel expenses for officials (which should be local individuals if possible) and supplies (staples, pencils, rope, tape, etc.). Costs for bid preparation, socials or banquets, and trophies or awards are prohibited. Once the bid is prepared, specify whether the club will require reimbursement and indicate a maximum amount expected. Note that the total budget allowance for expenses cannot exceed 50% of the competition entry fee income. The club will determine the entry fee based on the anticipated number of entrants and the expected expenses. Typically entry fees range from $75 to $110.

The finals will use the published F3K rules. There will be no fly-off in the finals. All tasks will be allowed. The submitted bids shall include the proposed tasks to be used in the finals. It is not required that the host club provides official timers for each competitor. It is required that the host club provides at least four official timers that will be randomly assigned to pilots each round. These timers will time from the field boundaries to ensure the integrity of the results and not interfere with the competitors on the field. In the case of the Poker task, if used, the host club must provide qualified official timers for each contestant in a group. If the Poker task is selected, the host club must include the maximum group size they will be able to accommodate. They must also indicate the experience level of the official timers and any training they will provide to the official timers to minimize any miscommunication between the pilot and the official during the Poker task. For Poker, the official is required to be on the field with the contestant per the F3K rules.

The Team Selection Committee will review all bids to assure adequate accommodations and suitable flying site. The Team Selection Committee will approve the competition site by simple majority vote of those members responding to the ballot.

Team Manager

The team manager will be selected in accordance with the "World Championship Team Procedures Governing the Academy's Sponsorship of FAI Teams".

Pre-Finals. When there are less than four months between the team section event and the World Championships, the team manager must be selected prior to the finals, and that person may not further participate in the selection program if he/she is so enrolled.

Post-Finals. When there are more than four months between the finals contest and the World Championship, the team manager may be selected after the finals.

Nominations. Any person wishing to be considered for team manager must submit his name in writing to AMA Headquarters not later than 14 days after the finals. Nominations for the team manager will be accepted from the AMA membership community; groups which can be involved in the process may include: program participants, the presidents of AMA recognized Special Interest Groups; previous and current team members and helpers, AMA Headquarters, and the Team Selection Committees.

A prospective team manager need not have been an FAI competitor. However, he or she must be thoroughly knowledgeable of the rules of the event for which he/she is being considered.

Appointment. The actual appointment of the team manager shall be made by AMA Headquarters and the FAI Executive Committee, in consultation with the chairman of the appropriate team selection committee. The FAI Executive Committee or Headquarters may select someone of their own choosing if not satisfied with the names submitted. The FAI Executive Committee has the authority to replace a team manager or team members. In addition to those duties described in the "World Championship Teams Procedures Governing the Academy's Sponsorship of FAI Teams", the team manager must submit to the Team Selection Committee a report documenting problem areas for future reference. The report is to be independent of the world championship report but should be sent to AMA Headquarters for distribution within 60 days after the world championship.

Budget

Up to 50% of the finals entry fees collected may be used for the finals expenses. The remaining team fund, including all the fees and donations, are primarily for financing the F3K team. The TSC shall allocate from the team fund monies for the following team expenses, but only to the limit of the fund:

1. Travel expenses not paid by AMA, such as vehicle rental and fuel for vehicles;

2. Baggage charges for model boxes (AMA does not pay for model box transportation)

3. Any other expenses approved by majority vote of the Team Selection Committee.

Rules Precedence

The document entitled "World Championship Team Procedures Governing the Academy's Sponsorship of FAI Teams" describes the standards by which all team selection programs are governed. Any items not specified within a team selection program will be covered under the "Procedures". In the event of a dispute or discrepancy, the "Procedures" will take precedence over a team selection program.

JOMAC 2012 AEROTOW

JOHANESSBURG MODEL AIRCRAFT CLUB

PHOTO ALBUM

John Godwin, old.bok@gmail.com

At 5500 feet above sea level you need some power in the tug!

Mike May's Bocian 9 1e

Mike May's Bocian 9 1e

Donovan Jeffery's 1/4 scale Wilga tug

Adrian Gray's 5m Alpina

Francois Varigas' 5m Thermic

Donovan Jeffery's Minimoa

Modified Triwon

Adrián Muiño, nick_cool2000@hotmail.com

As many others, the Triwon is an EPO ARF plane, inexpensive and well solved in its construction. It seems to be designed as an electric trainer more than a sailplane. My idea was to convert it into a small glider. I am writing this with the intention of helping RC enthusiasts that own similar airplanes, and not only this particular product.

Here is what I did. Let's start with the main figures:

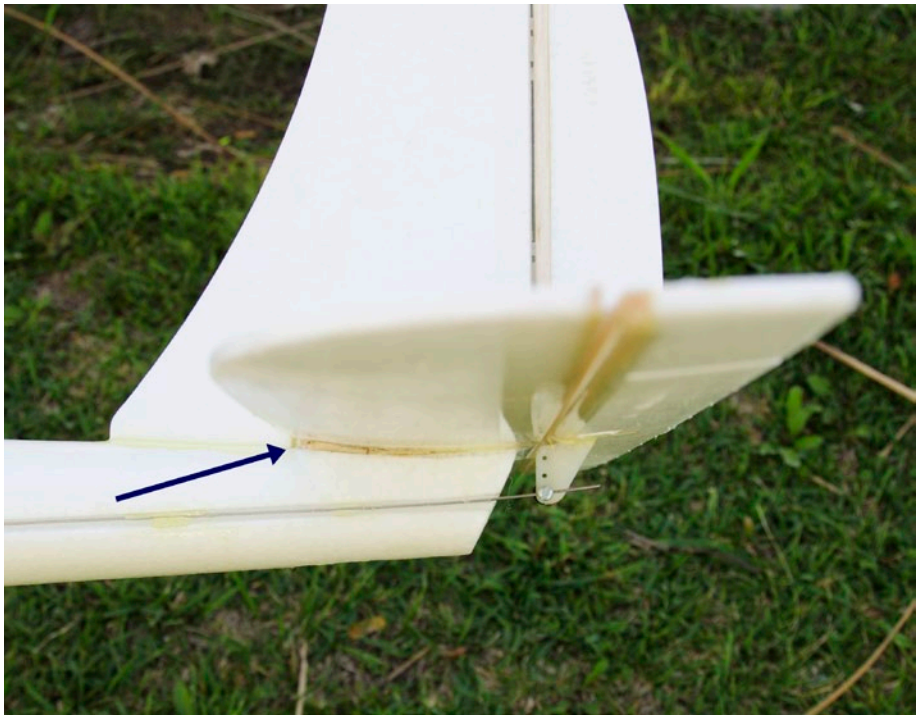
Wing span:	1200 mm
Length:	900 mm
Area:	19,2 dm^2
Total weight:	490 g

The power plant used was a 39 g 1200 rpm/v motor (Turnigy 2627-1200) with a longer shaft, and a 25A ESC with a 2A BEC (the one I had), plus an 11,1V 850 mAh 30C Lipo.

This power plant can deliver 78W on a 7 x 3.5 prop at 11.200 rpm. The ESC is overrated; a 15A one will go better. The Lipo can be smaller because the motor takes just 7A peak and the powered time is over 10 minutes. I guess a 11,1V 600 mAh 30C will be perfect.

As a rule of thumb the weight of the motor in a sailplane should be between 6% and 8% of the total weight of the model, the ESC and Lipo will be according to the motor.

Weight analysis:	
Frame	220 g (can not be lightened)
Servos	40 g
Rx	20 g
Lipo 850 3S	80 g
Motor	40 g
ESC	20 g
Acc. & mods.	70 g
TOTAL	490 g
Wing loading	25,5 g/dm^2
Power	78W
Thrust	390 g
Speed	70 km/hr
P/W	173 W/kg



A 2 mm balsa wedge under the stabilizer leading edge effectively reduces the wing incidence from 3° to 1°.

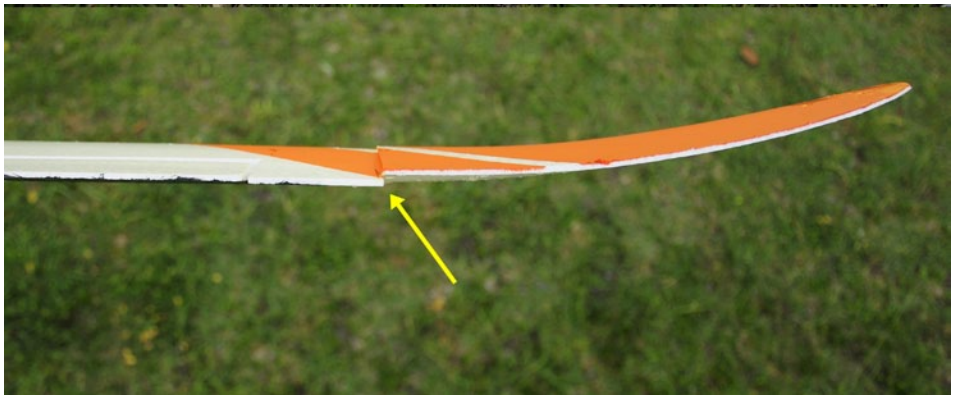
There is not much to do with the weight. We can save 10 g in the receiver (mine is a pig) and 15 g more in the Lipo, and that seems to be all. I also used a 1200 mAh Lipo (120 g) and the difference can be appreciated.

To achieve a thermal sailplane behavior and solve some kit problems (the wing was twisted and they had wash-in), I made some modifications I want to share.

1) First I reduced the wing incidence from 3° to 1° as metered in the inner part of the wing. It makes the model faster, more efficient and with better behavior during all flight phases. It was made adding 2 mm of balsa below the front part of the stabilizer and letting the rear part rest over the foam. This was the main change regarding the flying performance.

2) I cut and paste the wing tips to add 1° of wash out, raising by 2 mm the trailing edges. I just cut and paste the tips using epoxy. I matched the leading edges with tape and raised the trailing edges with 2 mm balsa during the epoxy curing. Wing tips are now at 0° and do not stall before the root. This was an important and yet simple modification.

3) The propeller was changed for a better quality one (7 x 3 foldable). The power plant can stand a bigger prop (8 x 4), but the 7 x 3 is enough and efficient. Even in summer the electronics never get over 45°C. It is a key to use a good and



Above: 1° was imparted into the wing tip using epoxy to reglue the joint.

balanced propeller, inexpensive props are very inefficient.

4) I made the tail planes sturdier by adding some balsa sticks. I also changed the push-rods for more precise and light ones, saving 6 g. In fact the tail has no looseness at all.

5) The tail moving surfaces were enlarged in chord (and area) just to simplify the previous step.

6) Painting was absolutely functional and works great; e.g. the cockpit was painted gray to avoid overheat with the sun. It was made with acrylic paint, but

Right: Balsa sticks added to the leading edge of the rudder and elevator for sturdiness. This also slightly increased the area of these surfaces.

permanent marker or synthetic paint will work OK, too. In such small gliders the color scheme helps a lot to keep an eye on it when high.

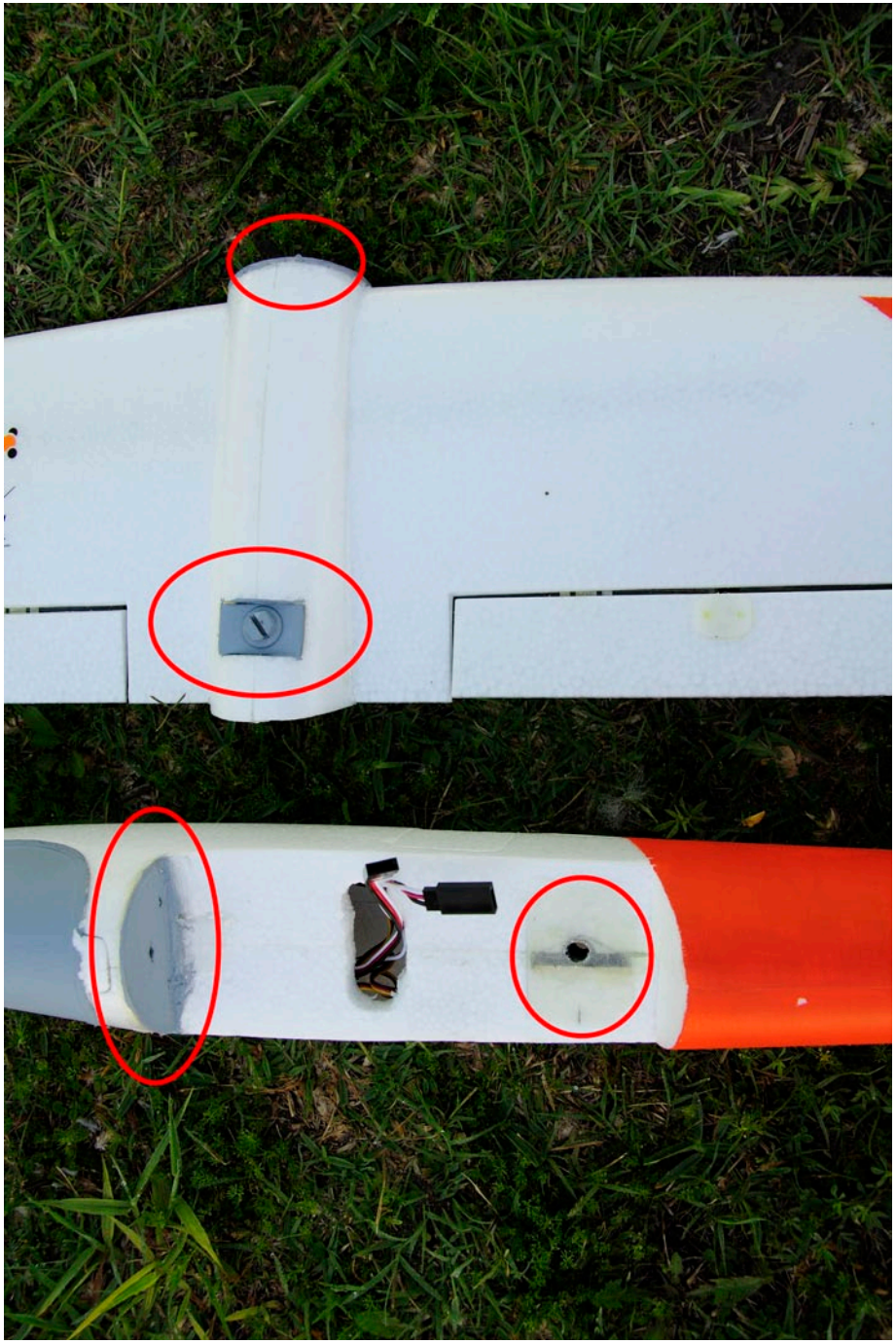
7) To make transportation and storage easier I made the wing detachable. I needed to cut some foam from the upper part of the fuselage and glue it to the wing. I also glued the carbon fiber spar and the wings to each other.

The wing now is mounted on the fuselage with a front pin and a nylon screw. Now I can transport and store the plane easily.

Just one piece of advice... To compensate for an eventual wing twist, when gluing the half wings consider the alignment of the tips of the wings, not the roots.

The detachable wing was the harder part to do, and it is the only modification that does not alter the flying conduct. Anyway, it makes the wing stronger and ensures its position. I did not mention it, but the carbon fiber spar is strong and huge! Gluing to the wings makes it sturdier.

Minor modifications and adjustments: air intake and exit were enlarged, tape was added to protect the belly during landing, the look of the hatch was improved, the ESC was mounted over the foam and the original plywood was removed, and F1 has extra glue just in case. I also sanded



Right: Details of the detachable wing. A pin is at the leading edge and a screw near the trailing edge.

the leading edges of the wing tips to wipe out the glossiness.

The required radio equipment is pretty common. I used two 8 g size inexpensive digital servos for ailerons and two branded 10 g analog servos for the tail. A 6-channel programmable radio is advisable.

I have a Multiplex EVO 9 with a 2.4Ghz Spectra module plus a 7-channel receiver.

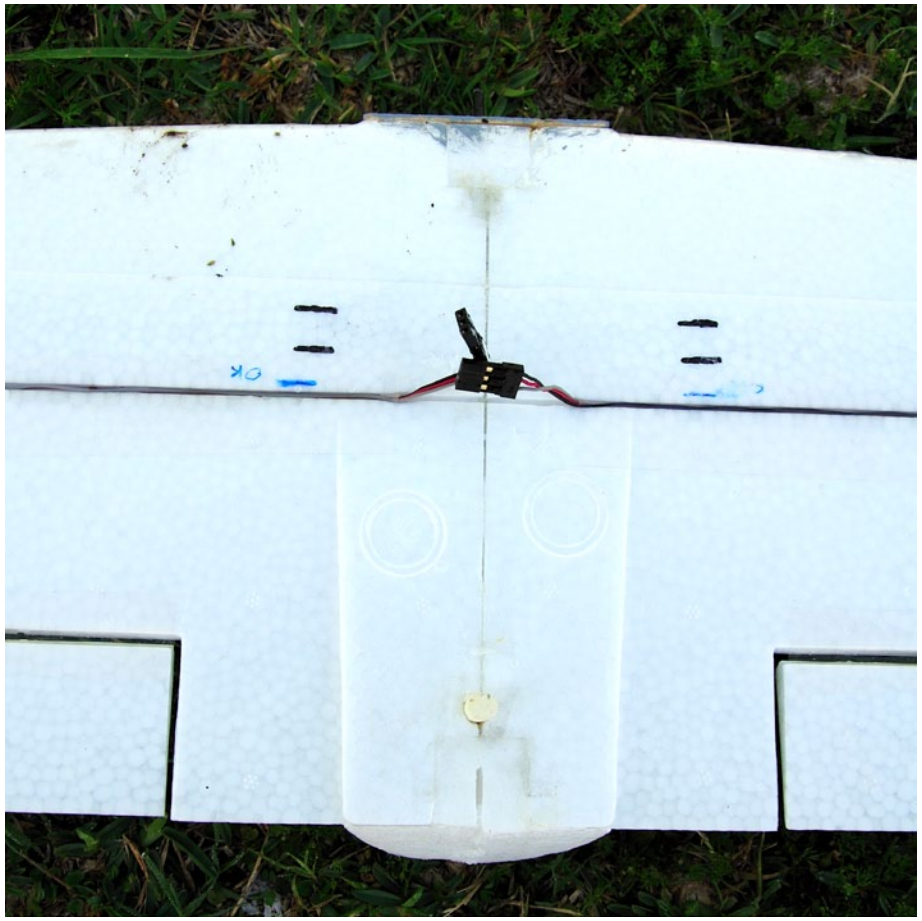
Final travels and exponential (each side)

Aileron	8 mm, -20%
Elevator	6 mm, -40%
Rudder	12 mm, -30%
Spoiler	5 and 8 mm

After some testing, the CG was located at 2 mm in front of the aileron wires. This seems to be the limit for a comfortable flight. Try to place it at 5 mm for the first flight. Due to the wing planform it is difficult to say its position in percentage, but considering just the root it is at 36% of the chord.

The available power is OK. Duration with 850 mAh Lipo is over 10 minutes of powered flight at 70%, but I do not pass 8 minutes.

A 110W power plant will make the launching safer and can be achieved by simply changing the prop. Just keep track of the temperature, as pushing the power plant can burn out some elements.

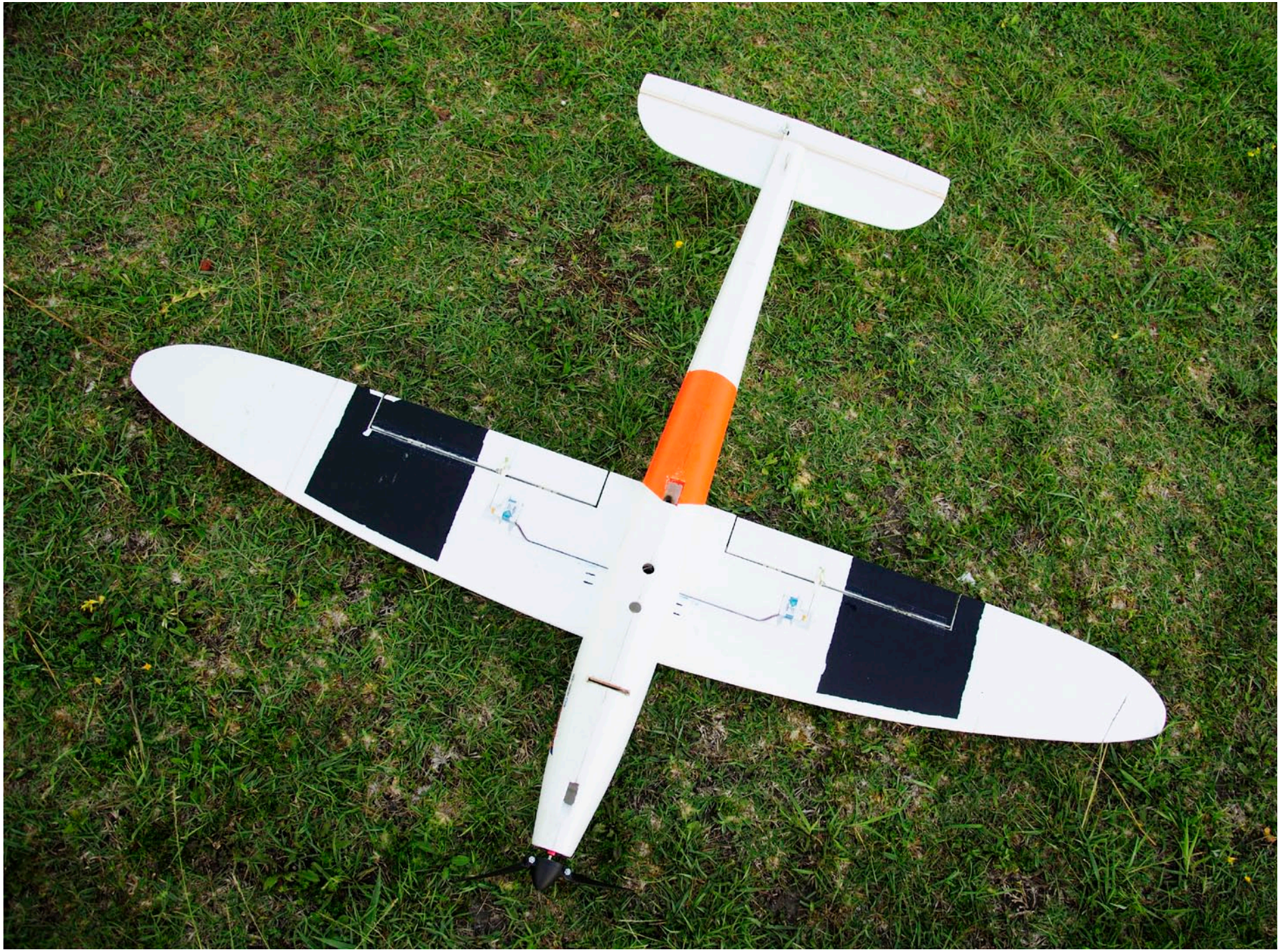


Final location of the CG, 2 mm in front of the aileron wires.

The maiden flight was almost catastrophic. The day was windy, the wing tips were twisted and I did not realize it - it is difficult to meter their AoA because of its shape - and, to make things worse, the aileron travel was too short to compensate for the problem.

The result was a very short and high banked circular flight. Second and third flight this day were better but far from being perfect. But I did mend this trouble by additional wash-out (raising one tip more than the other) plus radio adjustments on the field.

Rudder and elevator are very responsive, particularly the rudder. But ailerons are very ineffective because they are placed near the fuselage instead oo near the



wing tips; that's why its travel is so long. On the other hand, spoilers are powerful.

Anyway, with the stated radio configuration you should have no problems, just use the high rate for the maiden flight.

Later a mixer was added, throttle to elevator (down 4%) to avoid major corrections during powered climbs. This amount is not enough to completely compensate for the effects, but adequate to reduce the pilot work load.

With all these modifications the Triwon is now sensitive to thermal activity, can go fast and straight efficiently, and behaves as a sailplane, albeit a little one.

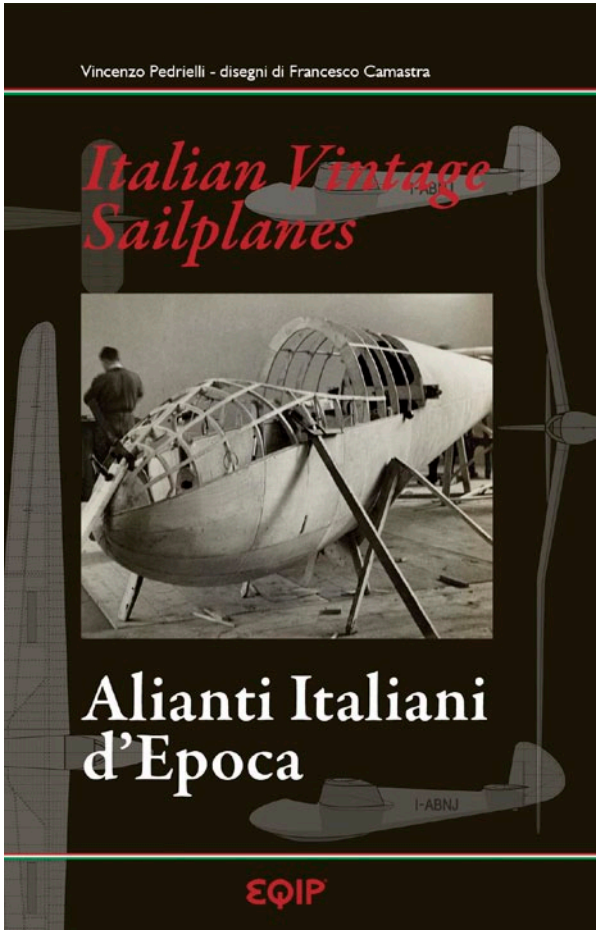
The plane is hand-launched and climbs steady but not fast. But the Triwon looses a lot of altitude during turns and it banks easily. So, to turn I just push the rudder a little and then I let it turn smoothly, compensating with ailerons if it banks a lot.

It lands on its belly, the included landing gear is used only for transportation and storage. Landings can be very short using the spoilers and they are very stable and predictable.

I hope these lessons learned help you to improve your models.

Good thermals!

Canopy removed, electronics visible.



Italian Vintage Sailplanes

Alianti Italiani d'Epoca

by Vincenzo Pedrielli

Vincenzo Pedrielli, Italian vintage sailplane event organizer, historian, and contributor to *RC Soaring Digest*, has completed an extraordinary book detailing a large number of Italian gliders.

Italian Vintage Sailplanes / Alianti Italiani d'Epoca is the product of dedicated research and includes explanatory text, airframe data, and historic photographs. Additionally, fellow researcher and glider historian Francesco Camastra has produced accurate scale drawings of each glider described, along with an appendix of fuselage profiles and cross-sections for individual types up until 1940.

As the printed title suggests, this is a dual-language book, with all text in both Italian and English. Mr. Pedrielli is fluent in both languages, but, as he says on his web site <http://www.vincenzopedrielli.it>, the English has a "strong Italian accent of course."

The book begins in 1924 at Asagio and covers designs through the last century. As can be seen by the collage of pages, it is quite beautiful in presentation, with brilliant artistry and well detailed illustrations.

Italian Vintage Sailplanes provides insights into the design, construction and flying of Italian sailplanes, many of which have been relatively obscure until now.

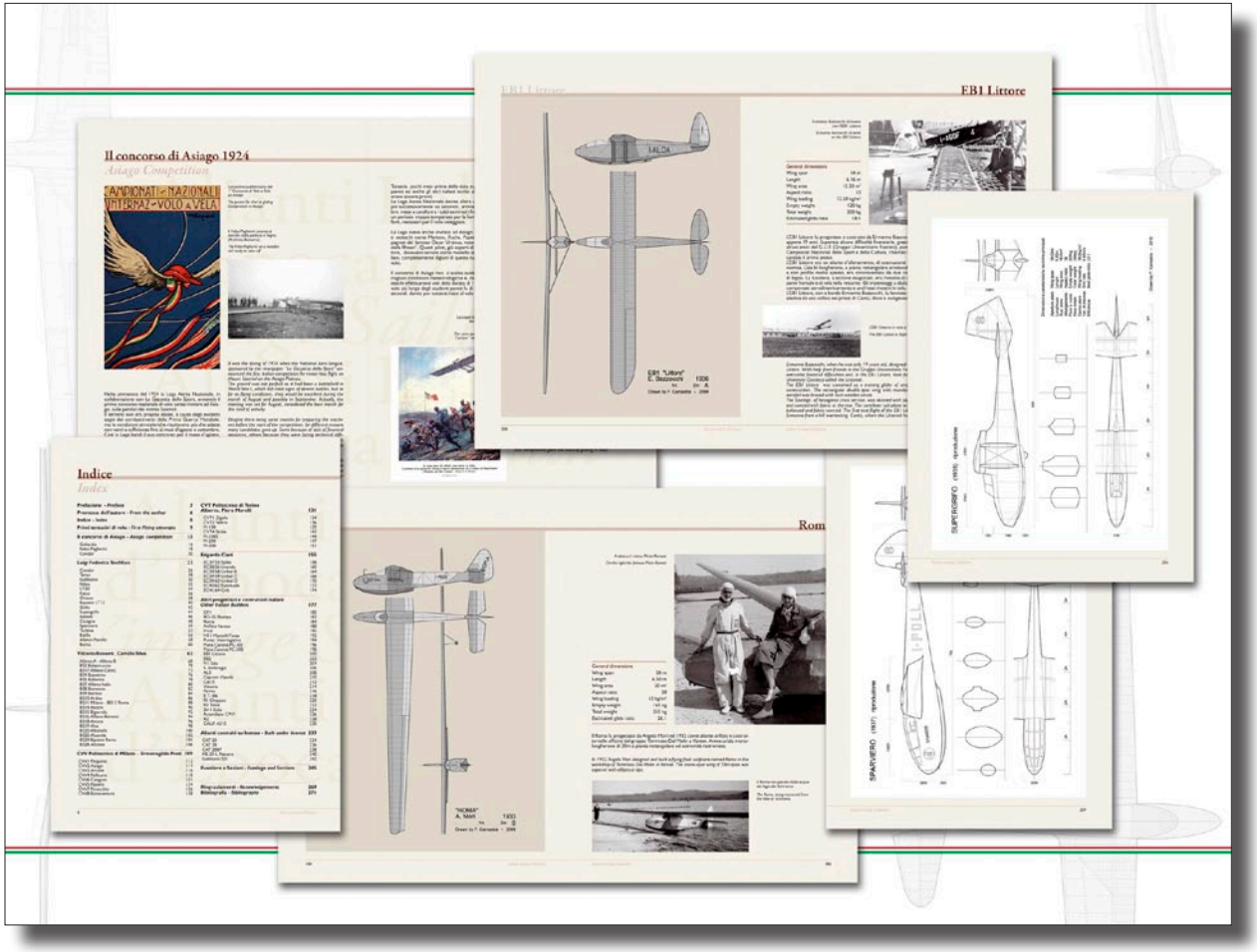
The contributions of Italian glider designers and builders, particularly the Morelli brothers and Edgardo Ciani, have had a world-wide influence, with many innovations appropriated for use in the designs of Europe, America and Japan.

This volume will be of interest to anyone desiring information on Italian gliding in general, to those who are simply fascinated with sailplane design, and of course to those who desire to model a little known glider for RC soaring.

For those in the latter category, Italian Vintage Sailplanes spouts a plethora of aircraft which to our knowledge have never been the basis for a scale model. The book's appendix, filled with line drawings by Francesco Camastra's, are sure to make the construction of the required framed fuselages far easier.

Italian Vintage Sailplanes is available through:

Paul E. Remde,
Cumulus Soaring, Inc.
<http://www.cumulus-soaring.com/books/ItalianVintageSailplanes/ItalianVintageSailplanes.htm>
Price: $60 plus postage



Italian Vintage Sailplanes

Author: Vincenzo Pedrielli

Illustrations by: Francesco Camastra

Preface by Martin Simons

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90 full page 3-view drawings, hundreds of black and white and many color photographs.

Dimensions: 8.7 x 11.8 x 0.79 inches (220 x 300 x 20 mm)

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